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MANAGEMENT OF DOCTORATE IN THE MARKET OF SCIENCE

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Abstract

The article is devoted to the effective management of doctoral studies (the third level of higher education) in the market of science. The concept of the science market is introduced; its characteristics are given. A mechanism for activating the investments of scientific research results in doctorate has been developed. The article discusses the issues of supply and demand harmonization in doctoral studies based on Salzburg principles. To ensure effective management and financial stability of doctoral studies in Armenia, it is proposed to introduce an individual financial plan of the researcher.

Keywords and phrases

Doctorate management, Science market, PhD student, Salzburg principles, financial plan of education.

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Համառոտագիր

Հոդվածը նվիրված է գիտության շուկայում բարձրագույն կրթության երրորդ մակարդակի՝ դոկտորանտուրայի արդյունավետ կառավարման խնդիրներին:

Ներմուծված է գիտության շուկայի հասկացությունը, բերված են դրա բնութագրիչները: Մշակված է դոկտորանտուրայում գիտական հետազոտության արդյունքների ներդրման ակտիվացման մեխանիզմ: Հոդվածում քննարկվում են առաջարկի և պահանջարկի ներդաշնակության խնդիրները դոկտորանտուրայում՝ հիմնված Զալց-բուրգյան սկզբունքների վրա: Հայաստանում դոկտորանտուրայի արդյունավետ կառավարման և ֆինանսական կայունության ապահովման համար առաջարկվում է ներդնել հետազոտողի անհատական ֆինանսական պլան:

Բանալի բառեր և բառակապակցություններ

Դոկտորանտուրայի կառավարում, գիտության շուկա, ասպիրանտ, Զալցբուրգյան սկզբունքներ, կրթության ֆինանսական պլան:

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Аннотация

Статья посвящена эффективному управлению третьего уровня высшего образования (докторантура) на рынке науки. Введено понятие рынка науки, даны его характеристики. Разработан механизм активизации внедрения результатов научных исследований в докторантуре. В статье рассматриваются вопросы гармонизации спроса и предложения в докторантуре на основе Зальцбургских принципов. В целях обеспечения эффективного управления и финансовой устойчивости докторантуры в Армении предлагается ввести индивидуальный финансовый план исследователя.

Ключевые слова и фразы

Управление докторантурой, рынок науки, аспирант, Зальцбургские принципы, финансовый план образования.

Introduction

Characteristics of the science market

At present, there are questions whether in our reality in the classical sense, there is a science market functioning, and if so, what characteristics it has. As a rule, controversial is the need for the realization and sale of science results/outcomes. It is argued that science is a product of mental work and cannot be pursued by commercial interests, so there is no need to convey the outcome of scientific research as the

merchandise that is being sold in the market [1]. From here, the conclusion that novelties, not being a subject of purchase and sale, cannot generally shape the science market.

But, on the other hand, the market is not just a buying and selling platform, but more importantly, it is an environment of supply and demand for consumer needs. Therefore, if scientific innovations and innovative results are formed, which are in demand, then they are manifested and realized in the science market.

At the same time, the research results are addressed to several consumers, such as the state, business structures, interested research circles, certain public groups, and so on. The United Nation's Secretary-General in his report to Commission on Science and Technology for Development emphasized the role of science, technology and innovation in building resilient communities, including through the contribution of citizen science (Twenty-second session Geneva, 13–17 May 2019) [2]. Therefore, in the science market, sales of research results and commercial interests cannot be pursued. Still, the important thing is that the resulting outcomes have addressees and are sold by consumers. This consumption process is regulated in the science market.

In general, the science market can be divided into two parts: theory and industry. The structure of the scientific market is based on the value of the end-use of science. Thus, if fundamental research is in demand in the science market, then the theory section prevails in the market structure. And on the contrary, if the science market is heavily dependent on applied research, the majority of the market shares the industrial sector (see Fig. 1).

However, in both cases, science outcomes must be market-oriented; otherwise, the findings of science and the resources they spend on it will be dispersed. Moreover, taking into consideration the current social and economic development trends, the science market should be very active and will try to manage the rapid and cumulative consumption of the proposed innovation results. Otherwise, the results generated in the field of science cannot be overwhelmed by the fact, that due to the lack of recipients in a specific period, they will simply lose the attractiveness of the investment.

In this sense, there are some risky consequences in the fundamental science system. As a rule, their beneficiaries are the state, academic institutions, and major financial and industrial nodes. End-to-end science outcomes are generally thought-proven to the forefront, sometimes without a quick return on investment, so they cannot be interested in the business world, and hence, they will not be presented with commercial interests at the time they offer them on the market. Consequently, the funding sources for fundamental research are largely formed of public finances (state budget, grants, foundations).

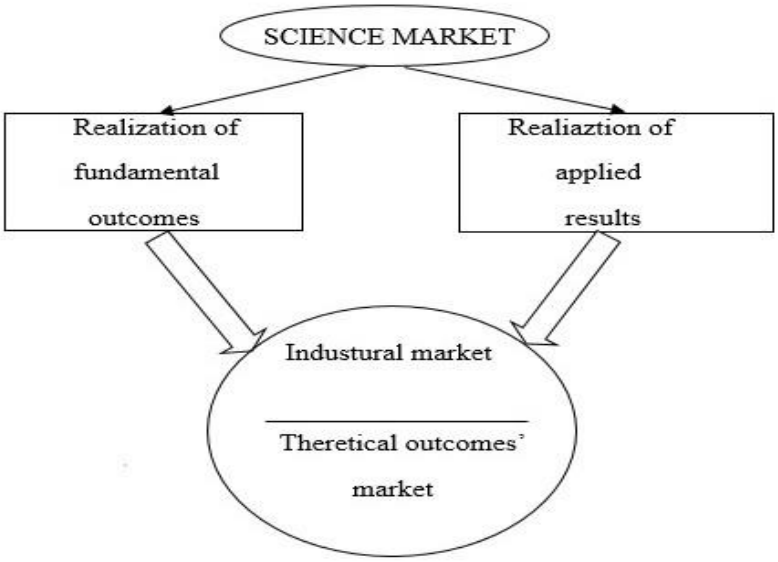

Figure 1. *Sectoralisation of the Science Market*

Business representatives of the industrial sector of the science market are looking for commercial interests in the expected scientific outcomes and innovation suggestions. The industrial sector of the science market operates with private funding sources, when organizations need innovations to reinforce their competitive positions and getting them, they quickly invest.

At the same time, scientific marketing has a serious role in the effective organization of doctoral studies, as research-related activities are focused on specific stakeholders and meet the needs of consumers and become a serious stimulus for the socio-economic development. It follows from the thing that the resources spent on doctoral studies should be directed to market research.

Even if the burden of funding for doctoral studies and research programs is entirely falling on the donor and exclusively at the expense of tuition fees, the absence of a financially-qualified external client does not imply that market relations do not regulate the expected scientific results. If, at the moment, there is no external funding for the end of the scientific activity carried out on the post-graduate students' initiative, however, there is a demand for them, and it is said that these outcomes are market-oriented, regardless of the nature of funding, if they satisfy the scientific requirement having specifically targeted recipients.

The approaches to problem solving have already been presented in the 10 Salzburg principles adopted within the framework of the Bologna process [3]. Thus, according to the core principle, the primary guide to research training is the improvement of knowledge through fundamental research and research activities. However, at the

same time, it is required that research training not only be directed to the academic field but also targeted to more and more labour market requirements. In this way, a graduate of a department finds work outside the academic circle, on the other hand, is considered to be the business world not only with his abilities but also with the skill of introducing his novelty.

However, setting the framework for post-novel innovations that are in demand in the scientific market is still a problem.

Indeed, what can be considered as innovation? Partial literature definitions are presented in the literature [4].

- do empirical research that has not been done before;
- interpret other's research in a new way;
- be interdisciplinary and apply different methodologies;
- form new information for the first time;
- develop a previously innovative research project;
- introduce unique and original ideas;

Of course, we can expand the scope of the lists mentioned above, but in our opinion, innovation is the outcome of the research that is required and has its consumers explicitly in the theory of science or the industrial market.

Market-oriented research

In the doctoral study organization process, the role of market-based research is essential, as a result of which the scientific-research activity is bridged with the theoretical or non-affiliated sector of the science market. At present, international practice is widely used in technology parks, scientific and cultural clusters, where science and production find ends in close cohesion, and innovation offerings are quickly embedded in practice. The doctorate also has its unique role in "science-driven activity - industrial market" bridge-building architecture, if it carries out market-based research.

Thus, academic resources, which are accompanied by substantial financial costs, may be directed to non-market research, and ultimately formulate such scientific findings that, in years, without demand, will lose not only their attractiveness in the scientific market but also financial sources.

In such a case, however, doctorate seeks to reach the science market; it will be presented on the emerging bridge with the so-called "one-way traffic" principle, without the opposite demand from the consumers. As a result, the academic resources available in doctorate will be used inefficiently, as the proposed non-market research programs, with no demand, will simply not appear on the "academically-free resources" on the industrial bridge (see Fig. 2).

Consequently, without the need for consumers and demand, the non-market-driven research directions formed during doctoral studies will lose the attractiveness of the implementation and will eventually be financed. In such situations, it can be stated that the doctrine programs are not directed to the science market, and the lack

of "science-production" interconnection complicates the implementation of doctoral programs.

By the way, the opposite situation can also be formed when the industrial market has an urgent demand for innovation, but the current doctrine does not respond to it in time. Of course, in the science-driven situation, the attractiveness of the research in the science market will increase, and industrial sector representatives will also be willing to increase the cost of financing in those areas over time.

In this case, there will also be no sufficient correlation between the use of academic resources and science, because the doctrine, failing to ensure a high return on innovation, will re-create "one-way traffic" on the academic resources, but this time in the opposite direction.

If the programs implemented doctoral studies are market-oriented, they are already forming a "double-pass traffic" on the "academic resources - industrial market" bridge as the proposed scientific developments are demanded and cost-effective.

However, the availability of only supply and demand is insufficient to evaluate the effectiveness of research projects in doctoral studies. Demand and supply of innovation projects may simultaneously coincide with the science market, but the research endpoints still have no opportunity to invest.

In this regard, the doctrine programs, besides the marketplace, should also have the capability of rapid deployment of the proposed scientific outcomes, which will allow limiting the "valley of expectations" and upgrading innovations from there to "academic resources - industrial" dog-on bridge (Fig. 2)

The practical application of scientific novelties obtained in the doctoral thesis will be rapidly implemented, so the range of expectations for innovation will be reduced.

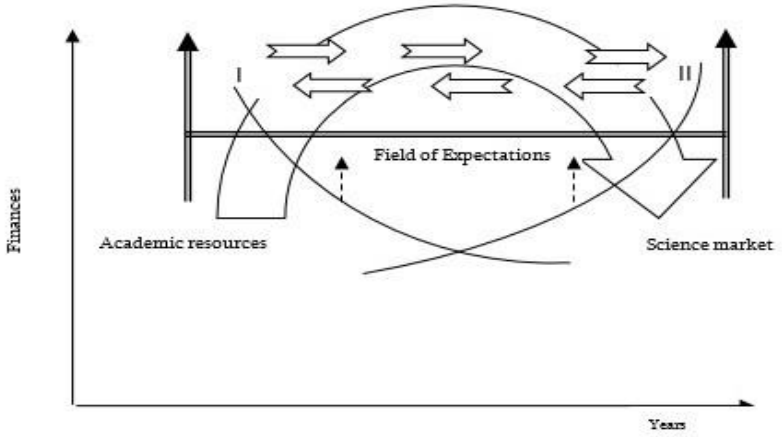

Figure 2. *The activation mechanism of research outcomes investment*

In this regard, market-based programs in doctoral studies should be organized in such a way that they can increase the level of research and development (fig. 2, curve

I) and the representatives of the industrial sector in the direction of rapid investments in readiness to succeed (curve II):

Moreover, it is clear that the curve requires the growth of funding for scientific projects and the shortest possible completion. Consequently, in the case of advanced and demanded scientific projects, besides being market-oriented, it should also be competitive in the market. And the essential factor in ensuring competitiveness is the formation of critical mass in doctoral studies.

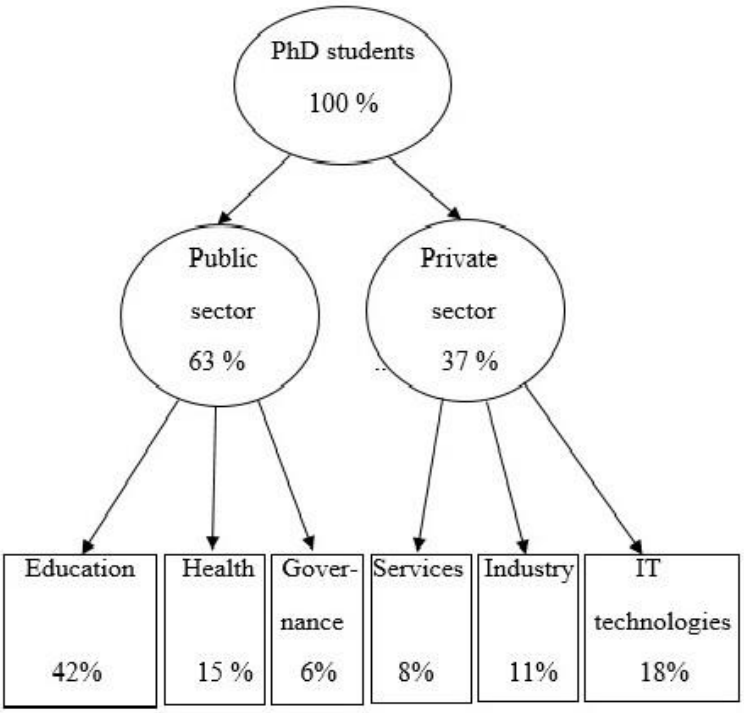

Figure 3. *Distribution of students in doctoral studies in Norway according to different spheres [5]*

Thus, the approaches to solving the above-mentioned issues have already been presented in the 10 Salzburg principles adopted within the framework of the Bologna Process. According to the sixth principle, the main component of research training is the acquisition of a critical mass in doctoral programs. The goal is to implement such competitive scientific projects, that will not only be required in the market and ensure the desired outcomes but also to bring together the necessary and sufficient post-graduate students, academic managers and financial sources from different universities around the scientific-production cluster.

The bilateral and multilateral cooperation of doctoral programs should be developed at the regional, national and international levels of universities. Doctoral students should have the opportunity to work in research teams and research

environments, including virtual research networks. If the tendency of access to critical mass is not yet observed in a developing country, international experience proves that the issue has begun in western universities.

Harmonization of the demand and supply in doctorate

Market research, even having critical mass, cannot have satisfactory outcomes if the science market does not employ mechanisms of harmonization and demand. The international experience shows that the science market can be activated both from the "top" with the support of the state and public finances and from the "bottom" as the doctrine of the university-based institutions.

In this regard, the Norwegian experience is remarkable, where a centralized Research Council operates at the state level and coordinates the research in the targeted clusters. The Research Council, which works with public funding, appropriates 7.3 billion Norwegian Krones annually for research in different directions (see Fig. 4). Here, the task is not only to connect scientific results and industry in universities but also to create clusters in the science market by coordinating the academic resources of different universities in targeted results, thereby forming a critical mass in programs that are implemented in doctoral studies.

In this case, at least 30% of the funding for doctoral studies at the University is carried out by the Research Council, which establishes close interrelationships between academic and industrial spheres.

Also, the Norwegian Research Council implements strategic tasks aimed at the development of the science-based economy, emphasizing the importance of the direct involvement of scientific managers and researchers in the doctrine on the scientific programs that the state has set. Meanwhile, market-oriented research is carried out not only from the "top" by the state but also from the "bottom", by direct involvement of the community, involving doctoral studies in the scientific-production clusters (see Fig. 4).

For example, the docking station of Heidelberg (Germany) has increased in the corresponding directions with two of the most significant innovative clusters - Molecular Biology and Europe-Asia research labs, and doctoral students are immediately involved in scientific groups. The doctorate at the University of Gerona (Spain) tends to increase with existing technoparks. In particular, at present, there are 112 scientific-research groups, which mainly operate in two directions: mineral water management, tourism industry. Of course, in such conditions, doctorate involves the formation of resource clusters in these two areas of research, which makes it competitive in the science market.

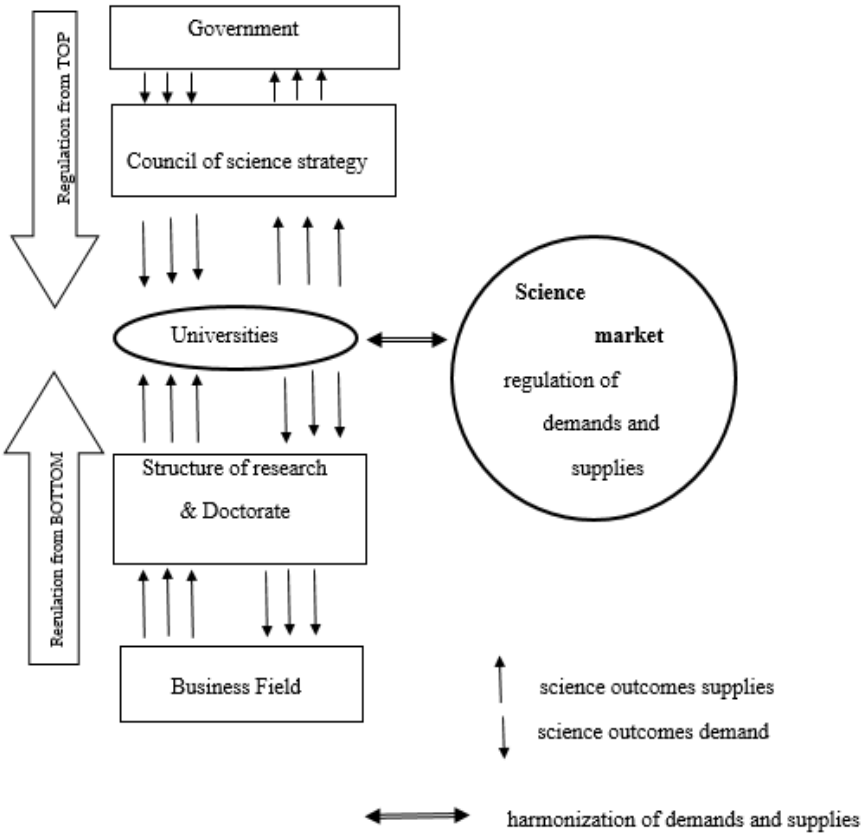

Figure 4 *Research Proposal and Demand harmonization approach in the Norwegian science market.*

Consequently, the vision of effective management of doctorate is to motivate the best young researchers in the country or even the other countries to continue their education at University. In this case, an innovative approach to education should be used, focusing on the implementation of interdisciplinary graduate programs. In this regard, it is essential that the programs offered by the doctorate should be as flexible as possible so that they can be adapted to the scientific interests of the PhD student and, on the other hand, ensure high standards in management processes.

At the same time, the effective management of research and doctoral studies has a significant role in the integration of science and the industrial sector (see Fig. 5).

- Implement third-level educational programs of research and vocational education in line with the educational needs of the national economy and society;

- Develop researchers who are in line with career-oriented learning and professional advancement, taking into account the changing economic environment and the emerging global information community,

- Create a favorable environment for the harmonious and comprehensive development of the science market,

- Establish an effective system of quality assurance in doctoral studies and financial sustainability of research work.

Figure 5: *The main functions of the Doctorate management*

The purpose of research and doctoral institutions at universities are generally comprised of two blocks.

The first block is educational:

- organize a third-level education program with a research program;

- continually improve educational programs, based on the perspective and mission of the university/institution,

- Ensure a culture of education quality assisting in inter-university co-teaching in a tertiary level education system.

The second block is research:

- Manage the University's R&D activities, ensuring its sustainable development and productivity;

- Facilitate the financial sustainability of the research activities, creating conditions for "labor market-university" cooperation and commercialization of scientific products,

- support the continuity of links between universities in the scientific-research area on national and international levels.

Research and doctorate institutes in universities are striving to become:

- a structure that is flexible enough to respond to environmental change quickly and adequately responds to the changing needs of society and the economy, the needs of the labor market,

- a structure that plays a significant role in the development of social and University and inter-university innovation programs,

- A structure that trains researchers for a full-fledged career, professional advancement and top management,

- A structure that provides primary education and research activities through the combination of economics and practice, through effective collaboration of researchers and faculty,

- A structure that is initiated in the relationships with a foreign business environment is capable of ensuring financial stability and social guarantees for all participants,

- A structure that is guided by a global perspective, internationalization of its scientific-educational system and European integration.

However, it should be noted that the current market of science is considered to be competitive on the basis of the interdisciplinary diversity of research and doctrine structures highlighted in the Salzburg third principle. Additionally, the Salzburg II Recommendations [6] clearly point out that the goal of regulating the tertiary higher education should be providing a diverse, inclusive and high-quality research environment as a basis for doctorate education [7].

In establishing scientific development structures, it is essential to pay attention to the diversity of the values, necessity and knowledge of cultural and scientific variety, taking into account the regional and national requirements. Joint PhD programs between different universities (both domestic and international) should be developed based on special needs that cannot be met with resources from one University and require the capacity of more than one institution.

The interdisciplinary cooperation between doctoral studies, which is in the common interest of the two participating institutions, is to create a competitive and up-to-date knowledge that meets the requirements of a rapidly developing economy, which, in its turn, will increase the efficiency of joint academic resources. The Salzburg II Recommendations point out that the problem of a sufficient number of post-graduate students (critical mass) is essential for effective management of doctoral studies to pay more attention to cooperation through collaborative programs and allow implementing research projects.

Fundraising stability

The precondition of doctoral studies management for being competitive in the science market is the existence of stable and sufficient funding. If the trajectory of the doctor's research is a novelty and can be in demand in the science market, but there is a lack of funding, then it is impossible to reach the desired result.

That is why the 10th Salzburg Principle concerns the appropriate funding for doctoral studies according to which to ensure the development of high-quality research programs, as well as for the successful completion of the candidates there is a need for main and additional funding.

The sources of funding for the doctorate are summarized and are mainly based on the following groups:

- direct funding from the state budget,
- funding from public benefit funds;
- international and local grants,
- financing from the business sector;
- funding from University funds,
- doctorate fees.

The structure of the doctoral studies organized in the Bologna process countries differs in both doses and directions. However, there is a general tendency: the higher the level of economic development of the country becomes, the greater becomes the financing of the doctorate at the expense of public resources, and vice versa.

In the framework of the Bologna Process, the EHEA Leuven / Louvain-la-Neuve 2009 Conference [8] featured the top tenure of higher education in the coming decade, including funding for higher education. Particularly, it was noted that the level of public responsibility for education is increasing at the current stage of higher professional education services. In that framework, public funding was once again highlighted as a key priority in ensuring fair access to autonomous higher education institutions and supporting their further sustainable development.

Some of the countries mostly finance higher education at the private and not public expense. However, the Bologna Process pays more attention to public financing, considering it a guarantee of sustainable education development.

Research has been undertaken with a range of indices, such as public funding for vocational education in GDP, the specific weight of public funding for education in the budget, public funding for one-year special education. Thus, in 2013, the proportion of public funding for vocational education in the western part of the EHEA has been more than 2% in Denmark and Norway, at least 0.7% in Slovakia and 1.15% in the UK. It is noteworthy that the share of public expenditure on science and research in GDP, according to the countries analyzed, is in line with the special educational expenses.

Based on the fact that some of the country's GDP can have a high rate of progress and, thus, the share of public spending on education and research services can be dropped, Eurostat also enumerates the share of public funding on vocational education in the budget. The highest level was provided in Denmark - 5%. In the United Kingdom, Italy, which also had a high degree of economic development, this figure was 1.69 and 1.76%, respectively.

As a comparison, it should be noted that the financing of education and science expenditure from the state budget in the Republic of Armenia has the highest share in recent years, but its major part is general education expenditures.

Fundamental scientific research in the Armenian higher education system is relatively weak, yielding their place to applied research. Moreover, state care is not significant in this area (10%), and extra-budgetary grants do substantial research.

An important indicator is the annual rate of public funding for one student, the highest in Sweden, Norway, the Netherlands, Denmark (over 13,000 euros), and Eastern Europe with relatively low rates of up to 5,000 euros. The average value of this index is 8,087 Euros in EU.

Thus, the requirement of the Bologna process has not yet reached perfection in terms of securing sustainable higher vocational education, with a degree of public responsibility and public expenditure. Public funding is curtailed in the eastern and western European educational space, and its coherence will require a long time for significant differences in the economic development of the countries covered by the Bologna Agreement.

This situation makes it more acute to doctoral studies in Armenia, where the state budget finances about 27% of the students. Moreover, researchers in PhD are provided with limited financial resources, as university resources in those areas are minimal, and post-graduate tuition fees are symbolic and do not have economic justification.

Therefore, at the time of admission to doctoral studies, it is appropriate to discuss the costs of post-graduate students and their sources of funding, namely, to make the future financial performance of the applicant during the entire lifetime of the doctoral education.

In general, the field of science seeks passive financial support when research costs are financed entirely from "top", receiving money from the actual budget or foundations. However, in our opinion, in the case of passive financing, the financial resources of researchers cannot be used effectively, as public financiers (government, non-governmental organizations, foundations, donors, etc.) do not show apparent interest in competitiveness of scientific research end results.

If active funding for research work is being carried out by businessmen, post-graduate students, university funds, interested individuals, the beneficiaries have a keen interest in both the quality and competitiveness of research.

However, it is not always possible to develop science with private funding resources, as they are often not enough for funding large-scale scientific programs, so even in the developed countries, doctoral studies are not funded entirely by public funds and is used mixed financing.

Moreover, in some Western European countries, where the share of public finances is high in doctoral studies, universities are also facing the challenge of managing their initiatives and implementing their own doctoral programs. In this approach, the state indirectly imposes on the universities a passive stance on the financing of doctoral studies and is not restricted only to the guaranteed public finances. And, of course, this commitment is directed to the scientific leaders who are trying to find alternative sources of funding for scientific research and to engage in doctoral studies.

Thus, about 55% of the doctoral studies organized at the Royal Institute of Technology (KTH, Sweden) are financed by public sources. However, in search of additional sources of funding for research in the University (international grants, EU research funds, employers), the faculty faces a challenge to be active. In the opposite case, after some time, they are not allowed to act as doctors while they are scientific supervisors.

We believe that the investment of this experience will increase the effectiveness of doctoral education in Armenia. At present, a situation has emerged where both universities and academia do not make extensive efforts to obtain financial aid in post-graduate studies, satisfied with only a low, often poorly funded post-graduate student resources and limited financial resources by the state. As a result, inadequate financing does not allow large and fundamental scientific projects, even in the presence of a critical mass.

In this regard, every applicant has a clear problem of doctoral student admission in Armenia but also makes the scientific outcome, as well as the individual financial plan of the researcher, specifying how much money will be allocated to the research grants, leases of laboratories, participation in international conferences, research visits to other universities, innovation results testing and others while post-graduate tuition fees have been deducted or state-funded now without any substantial economic justification.

Conclusion:
Researcher's individual financial plan

A doctoral student may be able to achieve scientific success in the current scientific and technical progress, if he/she carries out activities in the interdisciplinary system, perform other research universities, experimental research, and test results, deliver lectures and discussions at conferences. All this is being seriously examined by opponents and scientific supervisors [9].

Of course, the listed functions will require significant financial resources, in the absence of which can be curtailed in the chain of post-graduate studies and will not form the expected scientific full-end results. In this regard, we consider the existence of an individualized financial plan for the researcher to be at the very beginning, which must have its formal approval. The individual financial plan can become an interesting tool for effective management of whole doctoral studies.

For each doctoral student, it is necessary not only to establish a scientific advisor and scientific subject but also to have a researcher's individual financial plan. University management should clearly demonstrate financial sustainability of research activities by showing its expenditure items and their sources. Otherwise, the admission of a PhD student will be deemed failed due to financial sustainability of the program as it cannot fulfil its objectives.

Table 1.

Proposed format of individual financial plan in doctorate
name, surname _____

Financing Sources	**Sum**	**Research Expenses**	**Sum**
Government Budget	F_1	Scientific Conferences	C_1
Foundations	F_2	Education	C_2
Grands	F_3	Research in LABs	C_3
University sources	F_4	Salary	C_4
Business sources	F_5	Publication	C_5
Education Fee	F_6	Thesis Defense	C_6
Financing Shortage	F_7	Overhead university expenses	C_7
Total	**∑F**	**Total**	**∑C**

For example, in addition to studying at the tertiary level of education, a student must pursue other university visits where specific research is being carried out. Additionally, the scope of the PhD research work can be interdisciplinary, which will require a profound discourse from other university professors and researchers. Therefore, funding for academic mobility is already a requirement for each post-graduate program.

Attendance and participation in international conferences are also included in the post-graduate learning program. It is an essential tool for communicating with international experts in the research field, making discussions and presenting scientific achievements. In current conditions, "closed" research in HEIs cannot have competitive results and require extracurricular scientific analyses. Hence, the doctoral student must have a keen interest in participating in conferences and has previously been provided with funding sources.

Experimental studies also make up an inexhaustible part of the doctrine and require sufficient funding for labs, experimental equipment and materials. Additionally, there is also a need to put into practice the practical application of scientific end-results, which also require significant financial support. Of course, this support for the implementation of these functions should be determined in terms of value in the individual financial plan.

If a PhD student's activity is part of a large-scale research project at the University, then his academic supervisor acts as an employer because he pays a salary to a young researcher. This practice is widely disseminated in Scandinavian universities, where the salary paid to a doctoral candidate is even higher than the average wage set in the

EU. In this region, the problem is relatively easy to solve, as the interdisciplinary fund is funded (about 62%) at the expense of public funds and business orders.

It turns out that the supervisor is primarily responsible for the implementation of a funded project and, therefore, gets together young researchers on a remuneration basis. For this reason, at the time of registration, the payroll article constitutes a significant stake in the individual financial plan of the applicant. And in those countries where doctoral studies are organized by the applicant's expenses, of course, the salary is received by the scientific supervisor.

In the expenditure section of the researcher's individual financial plan, it must have an article for the dissertation defence process. Even at some western universities, there is an obligatory requirement of at least one international opponent, whose financial expenses are covered by the University. However, the function of the opponents, in our opinion, should be expanded by moving it to a "social domain". Thus, official opponents, as a rule, appreciate and value the dissertation, revealing the shortcomings in work. However, their activities would be much more effective if, before the defence process, official counterparts consulted with the doctor on a fee basis, presenting the ways of reforming the final dissertation.

Certainly, the researcher's individual financial plan should also include university overhead costs associated with the use of computer rooms, libraries, offices, and gym halls. The doctoral candidate conducts most of his research and education at the University, in which the University spends significant resources.

The researcher's individual financial plan should also outline the funding sources for the doctoral program implementation (see Table 1). In addition, the financial plan should be made with a deficit. It will impose on the supervisor and young researcher additional resources to fully implement the program. That means they need to make a personal marketing campaign in the science market to discover the new direction of demand for the end of the program, and, consequently, stakeholders and supplementary financiers.

The results of the scientific research carried out in this way are most effective in the science market, with a more extensive addressing to consumers. Meanwhile, marketing by universities in the science market with the expectations of additional funding resources, in turn, encourages businesses to apply innovative technologies. Thus, large and small enterprises involved in doctoral studies in Norwegian universities provide adequate investment activity. This fact speaks of the thing that the "industrial sector of the academic field" is quite effective in the country, which allows universities to get as many financial resources as possible from the business sector.

But on the other hand, science-based market marketing does not only provide financial input from the business but also reveal the demand for the industrial sector to develop new scientific trends, which predetermines the future strategy of competitive development and effective management of doctoral programs.

At the same time, it is essential to note that Norway has a significant role in the structure of doctoral funding sources, in particular the allocations from the European Union Grants and Research Councils (25% and 33%). However, the University's own

resources, which are formulated with the immediate funding of the state, play a significant role here. At the same time, as a result of the recent global financial-economic crisis, some funding has been dropped from a private business to a doctorate.

The University can redistribute its funding sources for its autonomy, partly financially contributing to the development of fundamental science programs (C7, F4) from the implementation of competitive programs at a specific moment. In this way, the student's individual financial plan, the University's means of income (F4), or university-wide overheads, is subdivided into the university subsidy (see Table 1, C7). In practice, the current competitive and practical programs in the science fever are called "locomotives of doctoral studies" that contribute to the replenishment of financial resources for the implementation of fundamental research.

A question may arise whether it is possible to accurately designate the researcher's individual financial plan at the time of the entry of the doctoral candidate or not. After all, the doctor will study for 3-4 years, and there will be possible changes in both the expenditure and the sources of funding.

Of course, there will be such changes, but we believe that even the necessity and presence of the individual financial plan for the researcher is mandatory in the applicant's documentation, as it clearly reflects the expected trajectory of the doctor in the science market and assures the sustainability of the finances of the proposed research activities if recorded are $\Sigma F \geq \Sigma C$ financial flows (see Table 1).

Finally, making a researcher's individual financial plan, an opportunity is created to economically substantiate the doctorate's tuition fees, as the document contains its research costs and the possibility of reimbursement. In Armenia tuition fees or state-funded funding do not have their economic justification and are still defined by tradition. Moreover, post-graduate tuition fees at universities are often balanced, without taking into consideration the complexity and cost-effectiveness of research activities in various professions.

This concern has been repeatedly pointed out that unlike Bachelor's and Master's students, PhD students don't have definite funding. It is therefore important to think about research funding if the university/institution wants to act as a "serious actor" in the Republic's science market. That can be an essential tool for effective management of doctoral studies in Armenia.

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88.7

COGNITIVE FUNCTIONS IMPACT ON SELF-REFLECTION OF PATIENTS WITH SCHIZOPHRENIA

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Abstract

The article represents the results of the study of cognitive functions with the help of Repeatable Battery for the Assessment of Neuropsychological Status (RBANS; Randolph, 1998), with extensive normative data capable of distinguishing between different cognitive domains such as Immediate and Delayed Memory, Visuospatial/Constructional, Attention, Language. Self-reflection enables to estimate a person's qualities and resources, so we studied the relationship between cognitive functions of schizophrenic patients and their self-reflection. The study of self-reflection of patients with schizophrenia (n1=46) shows that only 24% of participants have high scores in contrast to the control group (n2=46) - 74%, 35% of the main group have low scores in contrast to the healthy controls (4%). Thus, we can conclude that the self-knowledge of patients with schizophrenia is rather weak or impaired; they find it difficult to recognize their characteristics. Correlation analysis by Pearson and Spearman shows that low level of self-reflection is connected with low levels of Immediate ($r=-.357$, $p<0.01$) and Delayed Memory ($r=-.428$, $p<0.005$), Attention ($r=-.426$, $p<0.005$), Language ($r=-.422$, $p<0.005$). Poor self-reflection of schizophrenic patients is connected with memory, attention and language impairment.

Keywords and phrases

Paranoid schizophrenia, cognitive impairment, self-reflection.

ՇԻԶՈՖՐԵՆԻԱՅՈՎ ՀԻՎԱՆԴՆԵՐԻ ԿՈԳՆԻՏԻՎ ՖՈՒՆԿՑԻԱՆԵՐԻ ԱԶԴԵՑՈՒԹՅՈՒՆԸ ԻՆՔՆԱՌԵՖԼԵՔՍԻԱՅԻ ՎՐԱ

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