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## **Organizations of the Sphere of Education and Science Methods of Competitiveness Improvement**

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**Abstract:**

*In the present article, the author researches, on the example of the chemistry sector organizations, state of the competitiveness of organizations in the sphere of education and science in the Russian Federation.*

*The author points out that education and science, has a great impact on the entire producing economy of the country. This makes questions of efficiency and competitiveness of great interest and interest. In the conclusion the author points out that currently in the Russian Federation research and educational organizations has a lot of problems that need to be solved.*

*Because of the research author make 5 scientifically proven ways to facilitate efficiency and competitiveness of the organizations of education and science.*

**Keywords:** *chemistry, chemical industry, education, science, organization, competitiveness, efficiency, Russia, Russian Federation.*

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## **1. Introduction**

In modern Russia, the system of educational and scientific organizations is a complex multi-element system created to provide the population with the necessary opportunities to obtain a wide range of general cultural and professional competencies. At the same time, not only each level of education, but also various elements of one level of education, differ. Also, education and science in different fields much differ. Chemical industry organizations of the sphere of education and science in the Russian Federation are separately incorporated organizations and some are parts of bigger universities or corporations. There are currently 83 such organizations in the Russian Federation. As per the Britannica, "chemical industry, complex of processes, operations, and organizations engaged in the manufacture of chemicals and their derivatives.

Although the chemical industry may be described simply as the industry that uses chemistry and manufactures chemicals, this definition is not altogether satisfactory because it leaves open the question of what is a chemical. Definitions adopted for statistical economic purposes vary from country to country. Also, the Standard International Trade Classification, published by the United Nations, includes explosives and pyrotechnic products as part of its chemicals section. But the classification does not include the man-made fibers, although the preparation of the raw materials for such fibers is as chemical as any branch of manufacture could be" (Standen *et al.*, 2017; Borovin *et al.*, 2015; Gorina, 2016). Chemical industry has a great impact on the entire economy of the Russian Federation. This makes researched of efficiency and competitiveness of great interest.

Applied to educational organizations of higher education and scientific organization, competent management plays an important role in the path of their qualitative development of. Classically in management, improving the management system and maintaining a high-quality product are based on the constant adaptation of the organization's management system, personnel management and transparency of financial flows. All the above could be applied to the management of an educational organization of higher education and a scientific organization, including one of the chemical industry. It seems that the administration of financial flows should be based on the solution of many important tasks, including:

- regular monitoring of the external and internal environment for timely detection of changes in competitive conditions;
- use of SWOT analysis.

To achieve such goals, appears very important to research practice and problems of the center of responsibility, which may accumulate ideas for the methods of management of higher education and scientific organization operation in conditions of multi-channel sources of financing. This issue is one of the priorities for the proper coordination and administration of financial flows of an educational

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organization of higher education and a scientific organization. If there is no single center of coordination and responsibility, it is impossible to put personal tasks to specific performers, while the control over the implementation of such tasks is likely to be weak and to be unsystematic.

There are different opinions as to whether it is worth creating a special structural unit for this purpose or the functions of such a focal point should be foreseen in the existing organizational and staff structure of an educational organization of higher education and a scientific organization. In the opinion of the author, it would be correct to create a special organizational and staff structure, the main task of which would be the sale of services, provided by the educational or scientific organization, as well as the current and planned collection of funds for the provided services. Often such units are commercial departments or even commercial divisions. Several scientists emphasize that for an educational organization of higher education this would be optimal from the point of view of the "innovative approach as a mechanism for the formation and optimization of the internal environment" (Management of a Higher Educational Institution in the Conditions of Innovative Economy: Scientific and Educational-Methodical Reference Manual, 2007), largely, similar may be also applied to scientific organizations.

At a certain stage of transition from a planned economy to a market economy, the structural units for planning became relatively "unpopular", but time put everything in its place. In modern realities, an educational organization of higher education or a scientific organization that operate in conditions of multi-channel financing, cannot count on a spontaneous income and expenditure of funds. To date, in any big higher education or scientific organization, there are planning and financial departments or divisions, economic departments or planning departments, strategic planning departments and other specialized units.

Modern realities of work testify to the need to transformation of the classical structure of a higher education or a scientific organization to the process orientation, that is, the definition of tasks and business processes, that correspond to them. It is also important to assign the functions to units clearly, without blurring them across multiple structural divisions, establishing personal responsibility of officials at all levels. In order to optimize costs and, perhaps more importantly, to improve the convenience of students and other clients, it is advisable to reduce the number of bureaucratic barriers and organize the provision of documents in one window mode. All these measures contribute not only to the survival of the educational organization of higher education, but also contribute to the further development, optimization of expenses, bringing the management system in line with international quality standards, which directly affects the perception of the higher education organization and scientific organization by students and other clients. Further, it will affect the image of the organization (Sazhin and Saraikin, 2016; Frank *et al.*, 2016).

## **2. Materials and Methods**

By the present article author presents unique research results. For the research author formulated and researched the problem, accumulated the sources base, conducted the research. During the research author used following research methods: qualitative, meta-analysis, logical, case studies, participant and non-participant observation.

During the sources base accumulation author collected and studied scientific and practical materials in different languages, English, German, Italian and Russian. The article may be useful to scientist conducting research on efficiency of educational and scientific institutions, quality of education, post-soviet development of Russia, as well as practitioners in the field of science and education.

## **3. Results**

Many experts correctly point out that reforming the organizational structure of an educational organization of higher education, scientific organization would be unthinkable without creating optimal working conditions for administrative employees, managing financial flows (Asaula 2007; Borovin *et al.*, 2015; Ilina, 2017). It should be noted, that all people have their own understanding of the "norm" and the "optimality", and in many bureaucratized educational organizations of higher education, a significant part of the administrative and technical personnel overestimate their significance and their real place of position, which, with the connivance of the executives of the higher educational organization and scientific organization does not interfere with their poor work and disgusting behavior with employees and students. In this regard, it should be noted, that under optimal conditions it is necessary to understand the state of the workplace in which the worker has sufficient resources to carry out his work. At the same time, available resources should fully correspond to the position occupied and, accordingly, to the functional duties that are performed.

In the conditions of the development of information and communication technologies, the creation of an automated management system is functional. On the one hand, it would facilitate the receipt of up-to-date information by middle and low-ranking employees, and on the other hand would allow to have important information digitized, which would exclude its loss and would stimulate the quality control of the work of the consultants. When implementing such system, one we could expect the following short-term and long-term results:

- optimization of decision-making time by introduction of the process of electronic coordination, introduction of uniform sample documents;
- evaluation of the quality of the performer`s work, not according to the characteristics, but according to the actual indicators of the statistics of work in the automated control system;

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- minimization of queues by electronic document circulation (including for preliminary coordination with subsequent transfer of original documents).

The solution of these tasks would facilitate not only the introduction of time management methods, but also the development of the foundations of the management accounting system. Creation of such business processes as the introduced method of management accounting requires from management of the educational institutions of higher education and scientific organization of implementation of a new system of management accounting of income and expenses. In the literature, there is a hard dialogue about the need to create such system. Yegorshin (2001) in his book "Management, Marketing and Economics of Education", insists on applying this method, whereas Kuzminov (2002) in his book "Modernization of Russian Education: Resource Potential and Training of Human Resources" considers such practice contradictive to the essence of the educational process. However, the implementation of active management accounting systems allows to optimize the qualitative and quantitative indicators of the work of administrative divisions, leaving the educational and scientific divisions more unaffected, which in an unstable economy is an essential condition for the existence of an educational organization of higher education.

#### **4. Discussion**

Competent management accounting helps to streamline financial flows as follows:

1. Identify the most priority areas of funding. In the event of a shortage of funds, at a certain stage, this will allow the calculation of the most important items of expenditure. In the event, when the necessary amounts are available, it will ensure the priority of payment on the most important accounts. At the same time, this process, if desired, can be easily automated and do not require additional decisions from the heads of an educational organization of higher education, scientific organization for each specific payment. Automation can be organized by issuing a single document, establishing category and the priority of payments for various types of payments;
2. If there are receipts to accounts in various banks (which is often the case with the receipt of funds from the budget and from the provision of paid services), it is advisable to draw up a spending map with reference to the accounts for which funds and appointments are received, to which they can be spent. This will significantly reduce the chances of a lack of funds in one account and the availability of funds in another account, however, which cannot be used due to the appointment of such funds.
3. Determination of the criteria for dividing incoming funds between the structural units of the higher education educational organization, scientific organization allows to automate the process of redistribution of incoming funds by authorized

accounting staff without the intervention of the management of the higher education educational organization, which, in turn, optimizes the period for making the managerial decision.

The issue of the structure of financing and its impact on the organizational structure of an educational organization of higher education will depend, primarily, on the state. It should be noted, that in modern Russia, the state has minimized its participation in the work and, accordingly, the support of educational institutions of higher education, giving them a high degree of autonomy and independence. Relating to the development of the market economy, customers have appeared for various educational and scientific products. There was such a new phenomenon as non-state educational organization of higher education, previously absent in the Soviet Union. The integration of educational institutions of higher education led to their accelerated integration into market conditions and increased the responsibility of the management of the educational organization of higher education for the financial development of their organizations.

Democratization and decentralization of management in educational institutions of higher education has positively proved itself, allowing to reduce bureaucratic obstacles, increase the responsibility of the average managerial staff, and, as a result, to train new personnel for their further use in responsible directions. It is obvious, that the domestic educational organizations of higher education, by their historical, cultural and nightly traditions, develop according to their own model, which is difficult to compare with the model of American and European educational organizations of higher education (Landau, 2010).

It is important to understand that despite the specifics of the development of Russian higher educational institutions, their integration into the international academic community is inevitable. In these conditions, educational institutions of higher education are placed in new conditions. New conditions give rise to new tasks. One of the tasks is to optimize, in accordance with international standards, the management processes of the higher education organization. Unfortunately, many of them still do not have an understanding that the full effect of restructuring the management systems of the educational organization of higher education and improving the quality of education should be expected not only from the introduction of management systems in a specific higher educational organization, but from the development and implementation of appropriate systems at the Federal level.

Unfortunately, practice shows that, as a rule, only a very large educational organization of higher education of federal significance can rely on real government support, including the alleviation of administrative barriers. However, the current legislation of the Russian Federation on education provides wide opportunities for the development of educational institutions of the higher education, both in the main type of economic activity, and in additional ones. Opportunities for implementation

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require from management of educational institutions of higher education the correct decisions in time.

From the managerial and economic point of view, it is important for the organization to have accurate information about incomes and expenses from the activities of each individual employee of the organization, every commercial activity. However, the peculiarities of the work of the educational organization of higher education often do not allow to highlight the effectiveness in the work (income / expenditure) of many categories of employees, especially the training and support staff. However, to assess the economic efficiency, it is advisable to establish certain standards in the work (for example, determining the number of students per teacher, per program, a certain number of Academic Teaching Staff rates for a certain number of School Support Staff rates, etc.).

Sometimes, it is difficult to predict in advance the effect of certain activities. For example, the holding a scientific conference (which is an integral part of scientific processes in any educational organization of the higher education), in which it is possible and accordingly necessary to provide an estimate of costs, but it is impossible to predict the number of participants, and what results this will give in the short term, and, even more, in the long run. Regarding the management of the educational organization of higher education, among other things, we can speak about the state of the budget of the educational organization of higher education, as a criterion for the effectiveness of the work (Samokhvalova, 2006; Gorina 2016). For these purposes, it is important to introduce proven management accounting techniques.

Introducing the technique of management accounting in the execution of the budget, it is proposed to use the following laws for its construction. It is necessary to formulate all the most important current and perspective decisions with plans, i.e. to follow the path of creating the method of private balances, which are noted above, will show the life cycles of projects, their effectiveness and relevance, they will make financial flows more efficient and transparent. A well-designed plan contributes to the adoption of competent management decisions, including on the decision on the feasibility of the project in the prism of costs and expected results. In a financially effective educational organization of higher education, this approach is used, also, when making a decision to extend the recruitment for an educational program in the next year, as well as the opening of new programs and in many other cases.

Without underestimating the importance of planning, it is essential to emphasize, once again, the importance of optimizing management processes, the adaptation of administrative and managerial processes in the educational organization of higher education to modern realities for the purpose of saving resources, by reducing the average time (working hours) spent on performing certain tasks, the introduction of an automated management system for reduction of the number of transactions with

paper documents, optimization of the staffing of the educational organization of higher education to an optimal ratio, outsourcing of a number of non-core or economically unprofitable works (from food, cleaning of premises, repair work to editorial and publishing services).

All of this should be part of the strategic planning system for the activity of the educational organization of higher education. It is very important to assess correctly the place and role of strategic planning in the educational organization of higher education, since through strategic planning, it is possible to develop the basis for further work and sustainable development of the educational organization of the higher education. Sustainable development of an educational organization is impossible without a good reserve and without adequate response to new developments and changing realities (both economic and demographic as well as legislative), timely implementation of best practices. In the implementation of strategic planning, along with external factors, internal factors also must be assessed. It is obvious, that the educational organization of higher education that has been working for many years and decades has its own culture and climate, that cannot be ignored in strategic planning, because these things, along with the established scientific school, determine the place of the educational organization of higher education in the educational system of the country and the world as a whole. Although, undoubtedly, the directions of strategic development of educational institutions of higher education, especially state ones, are set largely from outside.

In the context of minimizing budgetary financing (including the number of budget places) and stimulating multi-channel financing, it is possible to single out the following priorities in the development of the strategy for promoting the educational product:

- 1) Introduction of information technologies in the educational process to increase the share of distance learning.
- 2) Provision of a personnel reserve for the renewal of intellectual resources.
- 3) Compliance of the balance between fundamental and applied education.

The solution of the task will be facilitated by such conditions as:

- full financial and academic autonomy of the institution;
- adjustment of the offer of the educational product in accordance with the study of the demand function;
- organization and management of training in the specialty as the organization and management of the business process;
- continuation of the process of decentralization of the management of higher education institution (Vorozhtsova *et al.*, 2010; Ilina *et al.*, 2017).

In the educational organization of higher education in the process of implementing, the main activity (educational activity), from the point of view of strategic



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management with the content part, has an educational process. At the same time, subjects of relations (student, employees and units, organization, etc.) can be identified clearly. This approach, as noted by Samokhvalova (2006), has positive aspects, including:

- assignment of responsibility to subordinate units, which optimizes the timing of management decisions;
- independent budget serves as the main source for material stimulation of the unit's employees;
- awareness of employees in their specific contribution of reducing expenditures of the relevant budget (which is not feasible within the budget of the whole organization);
- availability of expenditure norms for each type of subdivision (allows to monitor these standards for their exceeding and / or not execution with the adoption of appropriate managerial decisions) (Samokhvalova, 2006; Sazhin and Saraikin, 2016; Zaman and Meunier, 2017; Meutia *et al.*, 2017; Zolov *et al.*, 2017).

Decentralization of the management of the educational organization of higher education by transferring several rights and obligations to structural subdivisions allows to reduce costs in vertical management, attract broad masses of employees and students to various processes in an educational organization of the higher education. It appears important to point out that unfortunately "until recently many "citizens" did not want to bear any social responsibilities. While this still exist, more and more we hear voices of civil society's members" (Grudtsina and Galushkin, 2013; Menshchikova and Sayapin, 2016).

## 5. Conclusion

Summing up, we can draw the following conclusions:

1. In the conditions of active implementation of automated management systems, multi-channel financing, and crisis manifestations, the staffing schedules of educational institutions of higher education are undergoing significant changes (primarily in the part of administrative and technical stuffing). Competent work of the management of the educational organization of higher education to optimize labor costs through process optimization allows to save costs significantly for administrative and technical personnel and related costs.

2. Speaking about multi-channel financing of an educational organization of higher education, it is necessary to understand, that for many educational institutions of the higher education, the main source of income from educational activities is the revenues from the provision of paid educational services. However, do not forget about other sources of possible funds, including grants for research. However, considering the complicated conditions not only for receiving grants, but also even for applying for a tender, it is expedient to create specialized departments for

groundwork in the structure of an educational organization of higher education. The functions of these departments should include the search for grants, the timely informing of authorized persons, the development of scientific teams for initiating the filing of applications, the full support of the process of preparing the necessary documents and their timely filing, as well as tracking the results, in the case of winning, making documents for receiving funds, assistance to scientific teams in the implementation of the indicators of grants, monitoring the progress of implementation, supporting the preparation of the reporting documentation and its timely delivery.

3. In a situation when, in most educational institutions of higher education, a minority of students are enrolled in budgetary places, the majority of students are trained on a contractual (paid, contractual) basis to conduct the marketing program as effectively as possible before the recruitment and the period of recruitment of students. For such purposes, it is advisable to create marketing departments in the structures of educational organizations of higher education, and in large educational organizations of higher education it is advisable to include in the staff list of faculties / institutes the posts of deputy deans / marketing directors or to combine it with related (for example, public relations, including the maintenance of official groups V Kontakte, Facebook, etc.).

4. It is a good practice to involve employers (especially large ones) in certain aspects of the activity of the educational organization of higher education. Minimum participation may be through the conclusion of agreements on assistance in further employment of future graduates, receiving practical recommendations to improve educational programs, performing database functions practices, involvement in the National Certification Commission. Effective is the joint work of interested companies and higher educational institutions in specialized graduates with the involvement of practical specialists and profound profiling with the further involvement of the best graduates in the interested company (in fact, the interested company prepares staff for such program for themselves, and educational organization receives financial, administrative, marketing support with a high degree of confidence of graduates employment in the above mentioned company).

5. Despite the fundamental nature of national education, often on several educational programs, practical orientation of educational programs is important. Meanwhile, the mass-market of employers requires graduates, having practically sufficient knowledge, not deep theoretical knowledge. These developments have challenged educational institutions of higher education to adjust their curricula. It is important to note, that the opinions of employers are one of the components of international ratings of educational institutions of higher education (and often, Russian employers are not familiar with most educational institutions of higher education, even if their graduates work for them in the company, especially foreign employers).

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