

Prerequisites of Choosing Software Product for Management of Small Innovative Enterprises in GSTOU

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Abstract—The article deals with the issues of existing small innovative enterprises (SIE) at higher education institutions – how stratification and separation in one organization interfere in an active assistance in large successful investment projects. A comparative analysis of successful involvement of SIE on the Federal level is done. Moreover, prerequisites for the development of the information system of financial monitoring of the small innovative enterprises in Millionshchikov GSTOU are provided.

Keywords—higher education institution; small innovative enterprises; the enterprise efficiency; efficiency criteria; efficiency assessment; monitoring; monitoring system

I. INTRODUCTION

The improvement of the higher education quality in accordance with the economic development is one of the significant tasks in the long-term conception of development of the Russian Federation till 2020. One of the main employer requirements for a higher education institution is that the process of education has to include internship. As a result, the science and production (training and internships) act as binding links of the current economic development.

Over the past few years there were considerable changes of both legislative and structural character in the sphere of the higher education of the Russian Federation.

The government strategy of education development should have a clear understanding of the education as a sphere of implementation of the social and economic investments which have a very significant importance for providing a sustainable development of society. The aforementioned conception is the foundation of understanding the development strategy as the adjustment of the economic mechanisms of functioning of an education system should be based on this fundamental rule. Education cannot be regarded as a sphere that lays a burden on the state budget and is not related to the economic development of the country [2].

Higher education institution today is not only an educational device providing prosperity and well-being of the scientific and social culture, but also a powerful enterprise developing various useful mechanisms. The models developed during the scientific activity of graduate students and scientists are being registered in the state registry of intellectual activity of many types, and raise the status of the education institution in general.

The world globalization affected employment of working-age population and led to competitive fight - the enterprises are compelled to prove the efficiency and functionality in every possible way [8].

The government policy promoting the regulation of legal relationship in the form of a creation of the small innovative enterprises in the process of intellectual activity development results in higher education institutions. Small innovative enterprises are the organizations developing and introducing high technology and products into the industry. However there is a more capacious definition which describes SIE as a contemporary type of modern business activity, the result of which is creation of a technology or service directed towards production improvement.

The scientific works of Kuznetsova E.Yu., Asaula A.N. are devoted to activities and production carried out in small innovative enterprises while the articles of Mesheryakova T.R. are dedicated to the peculiarities of their creation and legal regulation. Finally, the queries of their information interaction are put in dissertation researches of Fakhrollina A.R., Gerasimova A.K., Markanyants A.G.

The first legislative documents of the commercial organizations established at institutions of higher professional education were confirmed in 2009, and in a number of prestigious leading higher education institutions of the country the areas of intellectual creativity of scientists were opened [1].

The law allowed the state-funded establishments of science and education to create the business enterprises for introduction of results of researches into production. In particular, higher education institutions, scientific centers acquired the right to form the economic enterprises for practical application of results of intellectual activity, including computer software, databases, inventions, useful models, industrial samples, selection achievements and “know-how” production secret. Exclusive rights on these activities and researches belong to the aforementioned scientific institutions. All actual management questions of these instances are regulated by the Federal law, including creation of economic innovative societies by the higher educational organizations activities, which consists in practical application of intellectual activity results.

All processes in SIE are regulated according to the methodical recommendations of a constituent body of law and have an open access on the official web sites.

Small enterprises allow commercializing the results of intellectual work of teachers and other staff of a higher education institution while keeping prerogative in authorship of intellectual activity. The paramount purpose of the SIE is to attract the real sector of economy they develop and thus become part of the mechanism between research, education and production activities.

Analyzing the small innovative enterprises around the country in general, it has to be noted that the most productive higher education institutions have created some small enterprises in certain areas of activity.

For example, regarding the structure of a separate unit in Lomonosov Moscow State University, the department of

innovation and technology transfer regulates the innovation policy for three companies:

1. The Innovation Consulting Center. The purpose of the Innovation Consulting Center of Moscow State University, established in early 2011, is to promote the development of innovative projects at Moscow State University by providing consulting services for developing strategies for technology commercialization and attracting external resources to implement the developed strategy.

2. Student Business Incubator is a generation and training of enterprising thinking professionals with an active lifestyle who have the professional skills to develop and modernize the economy.

3. Ltd. "Control center of intellectual property of MSU" assumes development of innovative activity of scientific community at MSU through search, providing legal protection and practical application of competitive results of intellectual activity.

Subsequently this concept of creation and distribution of SIE was followed also by other higher education institutions, though the methods of formation of the enterprises in technical colleges characteristically differ from the humanitarian ones. In Fig. 1 the chart of creation and formation of SIE since 2009 is submitted.



Fig. 1. Dynamics of generation of economic companies (economic partnership).

Fig. 2 presents the chart of distribution of the created small innovative enterprises of the Russian Federation in federal districts [3].

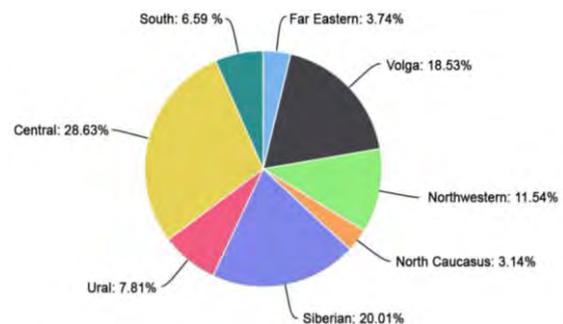


Fig. 2. Distribution of the created economic companies (economic partnership) in federal districts.

II. METHODS AND MATERIALS

There are 9 small innovative enterprises in the structure of the Grozny State Oil University:

- Ltd. NPO South-Him-Prom
- Ltd. Energiya Plus
- Ltd. NPP Yug-Geoterm
- Ltd. MKTs Interstadi
- Ltd. NPP YUG-GLONASS
- Ltd. NPO Informatsionnye Tekhnologii-GGNI (Information Technology – Grozny Oil Institution)
- Ltd. TSKITT
- Ltd. NPP Energoprom-engineering
- Ltd. INPROTEKH OF GGNI.

Nine years have passed since 2009 when small enterprises were first introduced, and during this time various problems have been identified that the founder has been trying to solve.

The problem of efficiency of the small innovative enterprises both in higher education institution, and in the external competitive environment is the fundamental one.

Despite the quasi diversity of commercialization of development activities, in practice, the work process is reduced to a “paper enterprise” necessary only for reports and fulfillment of performance indicators for universities.

Also, the activity of SIE is not always positive in terms of economic profit – that also proves its inefficiency.

The processes of modernization of education have led to a tendency towards the consolidation of educational institutions through their reorganization and merger, but with the preservation of a number of small innovative enterprises. This led to the emergence of the problem of integrating information flows from different enterprises into a single university system. In other words, several small innovative enterprises within a university often do not interact for the benefit of building up an innovative potential.

The regulations and guidelines for small innovative enterprises do not indicate direct performance criteria; therefore they are classified by the performance of the small enterprise as a whole.

The criterion of efficiency is an indicator or a system of indicators, allowing one to assess the degree of achievement of an enterprise's goal. The criteria of effectiveness allow, in turn, building a university ranking - so a number of higher educational institutions have developed a set of measures to improve their performance.

The features of regulation of the small innovative enterprises entailed a number of requirements to an

assessment of activity efficiency. In works of Anishchenko Yu.A., the approaches to an assessment of the innovative enterprise are formulated.

The author identifies four approaches to identifying the effectiveness of enterprises:

- target,
- resource,
- resource and expensive,
- design.

All of the above approaches reveal the degree of effectiveness of a small innovative enterprise for a founder. Based on the same initial data set, they analyze activities differently, but in the end the result is considered as the nominal value of the profits and, accordingly, is considered as a percentage of efficiency and rating of the enterprise and the founder.

III. RESULTS

Nine small innovative enterprises under the GSOTU, formed during different periods of time since 2010, operate in separate areas of the Institutes - information technology, oil and gas, construction. They submit reports directly to departmental authorities on regulatory acts, but do not collect them in the same database for the university as a founder. This is caused, of course, by the fact that there is no regulatory framework for the collection of information for the founders.

Thus, there is a need of complex inventory of results of the small innovative enterprises activity by application of information technology for detection of levers to increase their productivity.

As all these enterprises work diversely, often the activity of one is absolutely unclear for another and it prevents them to become partners in the grant and sponsoring programs.

For the last three years the number of SIE increased in Russia by 22%, and it gave an impulse to development of innovative economy.

The comparative analysis of SIE in the USA and in Russia shows that in America small enterprises coordinate their work, but in Russia not only SIE, but also other objects of innovative infrastructure meanwhile – science and technology parks, incubators are separated even in one founder [5].

Though the main reason of research and development insolvency in Russia is considered to be an incompetence of the organizers and key persons acting as generating elements of the scientific system [6].

The competent organization and administration in information system will allow us to work successfully with the enterprises not only in the environment of higher education institution, but also with the neighbor enterprises and founders [6].

For example, most the enterprises of the leading higher education institutions of the Russian Federation successfully

help subsidiaries to receive profit and deposits of investors. As a successful factor the existence of a clear and full picture of the business plan - the accurate organization of educational infrastructure of founders and minority shareholders – helps them with it.

Prerequisites of creation of the systems to account the activity of SIE were also repeatedly considered by the founders, but absence of the well-developed regulation forms of the accountability imposed an ambiguity in administration.

So, the information system is necessary, which not only will provide collecting, storage and data processing for identification of efficiency criteria, but also will carry out forecasting of the most favorable decisions. Such systems are widely used in the sphere of sales, the exchange markets, in forecasting of communication services, in an assessment of kinds of activity.

The system of monitoring is a way of the organization of monitoring works so that it does not take a lot of time and resources, and is easily feasible. The systems of monitoring differ in complexity - from a sheet of paper and a notebook or archive to the systems of an electronic archiving and databases.

The system of financial monitoring - the information support that allows one to trace the economic condition of the project with the purpose of its control and analysis. Such systems are widely applied in the sphere of public administration, business, leasing companies, but their application is often restricted by the stage of analysis of a financial state without use of forecasting functions.

Phasing with the system of financial monitoring for the small innovative enterprises includes, first of all, creation of a database with the data of accounting reports. Certainly, decision-making depends on completeness and reliability, availability of the basic data.

Let us enumerate requirements for the basic data:

1. orderliness of information for its further transformation under necessary converting;
2. a set of initial data in the form of a row is necessary to carry out completeness of support of decision-making [3].

The basic data form a database of the information system, but to put forecasting functions, it is necessary to solve a number of problems.

Considering that realization of methods of the analysis and forecast for development of administrative decisions is a rather complex challenge not only from the economic, but also from the mathematical point of view, the relevance of a rational choice of an economic-mathematical set of tools which will allow us to receive a mathematical model of the analysis of forecasting increases.

The use of economic-mathematical methods for realization of the system of financial monitoring and management of

activity of the small innovative enterprises assumes the use of the corresponding tools.

During the previous researches on a subject of the comparative analysis of development tools, the choice fell on the program 1C: Enterprise environment. Certainly, the main reason for the decision was that all information data flow in the founder enterprise is also realized in this environment, and, therefore, it excludes the problem of additional converting of files.

1C: Enterprise" is a commercial product, which contains a complex of objects, information massifs, algorithms of information processing. The product of 1C is characterized not only by full functionality for realization of problems of a subject domain, but also by technical readiness to work from the moment of start.

As the program environment "1C: The enterprise", the stage of informatization of a higher education institution according to the Concept, accepted by the solution of the Academic council, is passed. Its addition will be determined in the structure by a research part of SIE.

After coordination and distribution of functions and roles by officials, the structure of the information base, algorithms of processing and a form of dialogues and output documents are determined. The primary basic data are accounting reports of the small innovative enterprise.

The designed information system of financial monitoring and management of SIE activity will also allow one to simplify registration of the new created small enterprises with collection of full information: the name, the address, founders, the type of the brought capital, authorized capital, bank details, primary activities, etc.

In a priority of the purposes of monitoring and management, we will list:

- opportunity to model business processes with unstructured data;
- opportunity to build models of decisions taking into account the risks;
- support of decision-making in the system by investment projects during all life cycle;
- compatibility of databases with other systems;
- information security of the system according to the legislation;
- increase of a SIE rating in the opinion of society and involving youth in scientific intellectual creativity [3].

IV. CONCLUSION

For definition of the leading role of small innovative enterprises, successful foreign experience of their development should be noted.

For example, in the USA in the last century among 58 most important inventions 46 belonged to small innovative enterprises.

The economic development and readiness of founders for partnership allowed the USA to grow such world names as Apple, Microsoft, Lotus, etc. Such break provided 75% of a gain of GDP, fully stating the economic success of these projects.

In the USA the work of the small innovative enterprises at higher education institutions consists of three stages:

- 1) fundamental knowledge;
- 2) national laboratory;
- 3) commercialization of innovations [5].

At universities long-term innovations are investigated most of all. Further, these projects go for consideration of private investors and enterprises, and researchers, keeping authorship, being engaged in future in patenting of the project.

Thus, the example of successful realization of a small innovative solution in production is clearly visible. Meanwhile the innovative success of small enterprises in the USA remains phenomenal.

University firms should not be positioned as the "making" organizations which work at commodity or technological markets. The last is a function of large and medium business. The economic importance of small innovative enterprises consists in that they suggest perspective, potentially favorable ideas and samples of the market products.

During introduction of the information system of SIE monitoring, the following purposes and problems are solved:

1. granting the relevant data for decision-making to the person making the decision (decision-maker);
2. acceleration of performance of separate operations in collecting and processing of data;
3. decrease in a number of decisions which the decision-maker has to accept;
4. increase in the level of control and discipline;
5. increase in management efficiency;

6. decrease in costs of the decision-maker when one performs supporting processes;

7. increase in the validity degree of the made decisions [4].

The realization of these measures will allow us to increase the stability of the small innovative enterprises of Russia, to reduce their risks of activity and to fully realize the competitive advantages.

In conclusion, the decision on creation of a research and production cluster of Moscow in the capital of the Russian Federation should be noted, which will make it possible to streamline the objects of innovative infrastructure – business incubators, hi-tech IT companies, academic institutes, accelerators. In the city, 39 industrial complexes are registered [7].

The collection of information in a unified cluster will allow us to realize various stages of the project in one production chain and at the same time to reveal empty niches.

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