ТЕОРИЯ И МЕТОДОЛОГИЯ УПРАВЛЕНИЯ

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STATE SUPPORT OF INNOVATIVE ENTREPRENEURSHIP AS A FACTOR OF OF ENSURING NATIONAL SECURITY IN THE ECONOMIC CRISIS

Аннотация. *Авторы в данной статье затронули важную проблему неэффективности сектора инновационного предпринимательства в нашей стране. Очевидно, что развитие данного сектора экономики особенно важно для будущего развития в России в контексте обеспечения национальной безопасности. Недавний экономический кризис и санкции зарубежных стран только оживили дискуссию. В общем наше исследование касается изучения факторов, влияющих на инновационное поведение малого предпринимательства. В статье разработан подход, позволяющий систематически идентифицировать и оценивать институциональные факторы в системе государственной поддержки малого инновационного предпринимательства. В качестве методологической основы исследования был выбран системный подход. В качестве частных методов использовались метод математического и факторного анализа, бенчмаркинга, опроса, экспертных оценок и др. Авторы разработали подход для оценки эффективности системы государственной поддержки малого инновационного предпринимательства на региональном уровне, дающий возможность определить фактический уровень развития управленческих процессов и выявить имеющиеся резервы. Его использование в практике государственного управления позволит принимать во внимание качественные факторы в процессе оценки эффективности системы поддержки в целом.*

Ключевые слова: *государственная поддержка, обеспечение национальной безопасности, методический подход, малое инновационное предпринимательство, экономический кризис, инновации, экономические санкции, институциональная поддержка, эффективность управления, оценка эффективности.*

Abstract. *The authors have developed a method of evaluating the effectiveness of the system of state support at the regional level, which makes it possible to assess the actual level of management efficiency in a particular region, and identify existing reserves. Correlation and regression analysis, which gives an opportunity to identify the most important factors that have the greatest impact on the effectiveness of the state support system in the sector. Also proposed correlation and regression models (for example, the model showing the influence of the effectiveness of information support for innovative activity of organizations in the region; model showing the influence of accessibility of innovative infrastructure on the number of small businesses in the region, per 100,000 inhabitants, and others). Application of this method in the practice of public administration of the small innovative business sector will take into account the influence of the qualitative factors in evaluating the effectiveness of the system as a whole.*

Keywords: *effectiveness of control, institutional aid, economic sanctions, economic crisis, innovations, small innovative entrepreneurship, methodical approach, assessment of effectiveness, providing national security, state support.*

Introduction. The state, its federal and regional authorities are called to create favorable economic, political, social, and legal conditions for the formation of the economic mechanism that would facilitate the development of small innovation entrepreneurship, entrepreneurial type of reproduction processes, and stability of the entire economic system.

Adverse economic conditions in which a development of small innovative business takes place, largely due to problems related to the lack of development of mechanisms for the implementation of laws, regulations governing the development of entrepreneurship. This fact makes it very difficult and even impossible the direct use of models of development and support of small innovative busi-

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ness, successfully implemented in several developed countries.

In Russia, the level of development of small innovative enterprises is much lower than in the industrialized countries. Moreover, in recent years, the innovative activity of enterprises in Russia on average has showed a negative trend. However, the situation at the regional level is significantly different. Analyzing the situation in the regions, we conclude that there is no direct connection between aforementioned indicator and the volume allocated in the region financial resources to support the field of innovative entrepreneurship.

In our opinion, in general, significant variation indicator of innovative activity of small businesses in the regions is due to different levels of effectiveness of institutional state support in this area.

State aid is a complicated phenomenon that may have several aims. The effects of this aid may also be varied and difficult described by a single indicator. However, in our study, we focused on the effects of the state aid as the growth of small businesses (SE) in general and the growth of innovative enterprises.

An important aim is to estimate how regional institutions of support affect the innovation activity of the system's actors and in what directions regional policy can contribute to shaping necessary conditions.

The business environment determines efficiency of small entrepreneurship. For this reason clearly defined property rights, effective institution work, information availability etc. all increase firm efficiency. It is quite evident that in transition economies, the major problems in fostering entrepreneurship can be derived from the cultural background and a non-existent entrepreneurial heritage. However, during the transformation period, a lot of potential can be created for opportunity development. There may be a hidden innovation and growth potential in existing firms that can be unleashed by introducing incentives and initiatives to improve business skills and know-how, increase entrepreneurial spirit, and promote an expansion mentality and an entrepreneurial culture. However, such efforts should not focus solely on innovations and growth. The diversity of local firms and the jobs they create should be appreciated too [1].

The economic literature has extensively discussed the problem about SMEs needs in comparison with large firms [2; 3]. SME financing is generally characterized by higher transaction costs for a few reasons: organizational features and business strategies generally do not allow them to contact with the external business environment in the same transparent way that a firm accessing state financing would require. Unlike those of large-size enterprises, SME business plans and strategies are rarely mentioned in the press or publicly disclosed.

It should be noted that the effectiveness of state support in the domestic economy is mentioned in the works of A.V. Savanovich [4], A.F. Garifullina [5], A. Kalmikova [6], G.A. Lukyanova [7], N.M. Gromova et al. [8], A. Dadashov [9] and others.

Most researchers consider the problem only from the perspective of state regulation of small innovative enterprises, although it is nowadays necessary to create an integrated system of support for this sector of the state. The problem of creating the infrastructure elements of such a system in most studies is solved exclusively with organizational and technological aspects, but the support system that should not be limited. Due to its support the possible involvement in the process of real economic reserves of small innovative businesses, enhance the dynamics and social orientation of economic development of Russia.

Our article focuses on solving important scientific problems consisting in improving governance through the elaborating methodology for assessing the effectiveness of public support for SE sector. This will allow to systematically identify existing reserves to manage and build effective administrative action.

Materials. We suggest to begin from the defining the notion of small enterprise. The definition of SE means that small enterprise is an enterprise that satisfies all of the following criteria firstly, has fewer than 100 employers and secondly, has either the sum of proceeds from the sale of goods and services not exceeding 400 million rubles.

The present study of the effectiveness of state aid to SEs was conducted in several stages.

At the first stage the preparation for the study has been made: the definition of goals and objectives of the study, interpretation of the basic concepts, systematic analysis of the research subject, the definition of procedures for the collection and analysis of primary data.

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In the second stage methods and research tools were developed.

In the third stage a study of efficiency of state support for the small innovative enterprises was obtained in the Russian regions by surveying managers of SEs.

The fourth stage included the creation of the dataset, the calculation on the basis of their performance indicators of the effectiveness of state support for SE, development and justification of correlation-regression models describing the influence of the individual performance of state SE on indicators characterizing the development of the SE in the regions.

The fifth and final stage of the study included the analysis and interpretation of the results, the formulation of conclusions and recommendations.

A small innovative enterprise was defined as a unit of selection to ensure homogeneity of sample.

It is traditionally measured by following indicator: enterprises engaged in technological innovation as a per cent of enterprises total. Data for these indicators was obtained from Russian Federal State Statistics Service. Thus, in 2013 the total sample of our study was 736490 businesses.

The term of technological innovation according to Rosstat's methodological notes can be defined as organization's activities related implementation of new or implementation of: technologically new products and processes, as well as significant technological improvements in products and processes; technological improvements in products and processes; technologically new or significantly improved services; new or significantly improved production methods of services.

We have chosen a 95% confidence level, 0.5 standard deviation, and a margin of error (confidence interval) of +/- 5%.

Our sample comprises 385 SEs from the different regions of Russian Federation. A questionnaire survey was conducted in 14 regions including Kaluga region, Moscow, Tambov, Rostov region, Republic of Dagestan, Republic of Tatarstan, Penza region, Krasnoyarsk region, Republic of Mordovia, Samara region, Chuvashia, Chelyabinsk and Sverdlovsk region, Tomsk region, among the heads and the clients of business incubators small innovative enterprises.

Consequently, the sample is representative and the results of the study can be transferred to the general set, that is, small innovative entrepreneurship of Russia.

Since SEs managers were interviewed not only as a source of information on the actual situation of their business, but also as experts evaluating the effectiveness of state aid sector for small innovative businesses. The experts were also directors of large, medium and small enterprises, the heads of higher education institutions, business-incubators and technoparks.

It was necessary to assess their reliability and calculate the corresponding coefficients. The number of experts corresponds to a small sample of experts Students. The average coefficient of congruence experts is 0.72. The average coefficient of argumentation for all experts is 0.85, which indicates a high degree of reasoning. Level of competence of the expert group was 0.785, which corresponds to an above average level.

System of state management of innovation projects of SEs can be described as a set of quantitative and qualitative indicators, the degree of influence on the performance of the sector SE is often undervalued. This study developed indicators to measure the effectiveness of certain types of state support.

The evaluation of these parameters is of great significance, since it is possible to determine the basis of the reserves in the management and improve the effectiveness of state aid system.

The evaluation of these parameters is of great importance, since on its basis it is possible to determine the level of those or other management activities. Based on which it is possible to reveal reserves in the management and improve the effectiveness of state support system for SE.

Approaches to the calculation of indicators that reflect the level of any management activities are slightly different depending on the research methods used in the analysis of specific activities.

Calculation of the first group of indicators is the result of a combination of several methods, which includes the method of questioning and the expert-analytical one. The scale of assessment of an indicator in this case is formulated to carry out a comparison of estimates of actual use criteria, directions and other methodological components of the system of state support of SEs and their expected effectiveness, the importance from the viewpoint of business executives and government agencies

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(as determined by the results of the expert survey). Directions was evaluated in fractions of a unit in the range from 0 to 1, with a gradation into six main states: a complete lack or insignificance of a certain criterion (0), a very small degree of use or efficiency (0□0.2), rather insignificant level (0, 21□0.4), the average level (0.41□0.6), greater level (0.61□0.8), a very high level (0.81□1.0) of the actual application and effectiveness.

The second group of indicators calculated on the basis of data obtained from the Federal State Statistics Service. It is an innovative activity of organizations (percent) at the end of 2013 year and number of registered small businesses on October 1, 2013, per 100 thousand inhabitants of the region [10].

Considering more detail the calculation of the proposed indicators it is possible to measure the effectiveness of our state support for SE.

Performance indicator of the state information support of SE:

$$I_{inf} = \sum [\![(I]\!]_{act} \times I_{imp}, \quad (1)$$

where

I_{act} – the actual level of development of each direction of information support;

I_{imp} – expert assessment of the importance of each direction of information support.

Similarly, the following parameters were calculated:

- an indicator of the availability of the existing state support programs (in terms of the established criteria for selecting businesses to participate in them);
- an indicator of the availability of innovative infrastructure;
- an indicator of the effectiveness of service delivery innovation infrastructure;
- an indicator of the effectiveness of personnel support;
- an indicator of the effectiveness of expert and consulting support;
- an indicator of the effectiveness of scientific support;
- an indicator of the effectiveness of financial and credit support.

As a demonstration sequence of the study we submit the analysis of performance indicator of the state information support for the SE. Based on an expert survey provided estimates of the importance of each direction of information support, where, firstly, the index is directly calculated, and secondly, it provides the possibility of comparing the actual and the indicator to calculate the maximum possible value of this indicator. In the theoretical assumption of the highest level of development in each direction information support this indicator takes the theoretically maximum possible value of 18.91 (3,782×5). Calculating the indicator for each region, we are able to compare the development of management activities in the field of information support SE to the maximum possible value, and relatively to each other, and simultaneously to formulate definite conclusions about the presence of reserves in the management.

Thus, the difference in the level of this indicator in the Russian regions is clearly shown, and it allows to evaluate the size of the reserves that are available in the state support system of SE, and the difference between the highest possible level of performance and the actual level in every region of the sample.

Correlation and regression analysis revealed the connection indicator of the effectiveness of public information support to the value of the SE final indicators □ the innovative activity of organizations, the number of registered small businesses in the region.

For the quantitative assessment of the closeness of the connection between the indicators used the correlation coefficient (r).

To calculate quantitatively the closeness of the connection we used the Cheddok's scale.

To test the significance of the coefficient found checking for significance using Student's t test.

The correlation coefficient was 0.7343, therefore, the association is considered as strong. Student criterion at the confidence level P = 0.95 exceeded the table value and was equal to 2,004, indicating the significance of the coefficient.

The coefficient of determination is 0.539 and indicates that 53.9% of the variation is determined by changes in the effective index of the state of information support.

Regression model under these conditions is as follows:

$$y=1,18x-4,9 \quad (2),$$

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where x – the effectiveness of public information support for SEs; y – the innovative activity of organizations in the region.

Correlation and regression analysis allowed us to identify dependencies and develop models describing influence the effectiveness of different directions of state support of SEs on the number of registered small businesses in the region (per 100 thousand inhabitants).

The analysis results are shown in Table 1 and Table 2.

Table 1

Characteristics of the relationship between the value of innovation activity of organizations in the region and performance indicators of the state support of SE sector

Indicators	The correlation coefficient	The characteristic of connection	The Student's coefficient	The coefficient of determination	The regression model
The effectiveness of information support	0.711	tight	2.004, signif.	0.51	y=1.167x-4.6
Availability of state support programs	0.396	noticeable	0.157, insignif.	—	—
The effectiveness of staff support	0.872	tight	2.28, signif.	0.76	y=7.95x-13.33
Availability of innovation infrastructure	0.152	weak	0.52, insignif.	—	—
The effectiveness of the services provided by innovation infrastructure	0.882	Tight	2.289, signif.	0.774	y=0.88x-2.8
Effectiveness of the legal support	0.763	Tight	2.103, signif.	0.58	y=5.89x-5.21
The effectiveness of marketing support	0.716	Tight	2.02, signif.	0.51	y=7.915x-11.56
The effectiveness of scientific support	0.684	moderate	1.95, signif.	0.47	y=3.72x-3.7
The effectiveness of expert and consulting support	0.816	tight	2.19, signif.	0.67	y=14.14x-19.45
The effectiveness of the organization of interaction with big business	0.648	moderate	1.884, signif.	0.42	y=3.72x-0.375
The effectiveness of financial and credit support	0.6002	moderate	1.78, signif.	0.36	y=2.66x-10.25

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Table 2

Characteristics of dependency between the number of registered small businesses (per 100 thousand inhabitants) in the region and the performance indicators of the sector of state support of small innovative business

Indicators	The correlation coefficient	The characteristic of connection	The Student's coefficient	The coefficient of determination	The regression model
The effectiveness of information support	0.628	moderate	1.845, signif.	0.39	y=13.88x-34.42
Availability of state support programs	0.86	Tight	2.259, signif.	0.74	y=74.5x-112.3
The effectiveness of staff support	0.216	weak	0.73, insignif.	—	—
Availability of innovative infrastructure	0.898	tight	0.81, signif.	0.81	y=70.68x-59.1
The effectiveness of the services provided by innovation infrastructure	0.158	weak	0.54, insignif.	—	—
Effectiveness of the legal support	0.445	weak	1.41, insignif.	—	—
The effectiveness of marketing support	0.628	moderate	1.845, signif.	0.39	y=93.45x-115.2
The effectiveness of scientific support	0.494	noticeable	1.52, insignif.	—	—
The effectiveness of expert and consulting support	0.49	noticeable	1.524, insignif.	—	—
The effectiveness of the organization of interaction with big business	0.727	tight	2.04, signif.	0.53	y=56.16x-8.77
The effectiveness of financial and credit support	0.602	moderate	1.79, signif.	0.362	y=35.88x-135.2

Thus, we developed a method that allows to quantify the existing level of quality processes (directions) sector management SEs in the region, and to identify existing reserves in the state aid system.

Conclusions. Having determined the key factors which have the greatest impact on the effectiveness of state support system, we obtained a possibility of rational distribution of resources for its operation and development. Identified dependence needs to be periodically corrected, that is not particularly difficult.

Thus, the authors have developed a method of evaluating the effectiveness of the system of state support at the regional level, which makes it possible

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to assess the actual level of performance management in a particular region and to identify existing reserves. Correlation and regression analysis, which allows to identify the most important factors that have the greatest impact on the effectiveness of the state support system in the sector. Application of this method in the practice of public administration small innovative business sector will take into account the influence of qualitative factors in evaluating the effectiveness of the system as a whole.

The proposed method allows us following. **Firstly,** to evaluate the actual level of development of individual management directions of the state support for the SE in regions of the country. **Secondly,** to conduct a comparative analysis of the levels of each of the directions of state regional control system to determine the leading regions, lagging behind and occupy an intermediate position for each indicator the efficiency of state support system of SE. **Thirdly,** to compare the actual level of the individual indicator of the effectiveness of state support with the greatest possible value, which identifies the available reserves in the management system of SE.

The conclusion that follows from the results of the study allows management authorities to focus on the directions of state support system, but it doesn`t mean ignoring the other indicators because only integrated management will ensure the maximum efficiency.

However, a detailed study of the whole system of running a small business and innovative features of its development in the future, makes it possible to carry out the final forecasting performance management system based on the proposed correlation and regression models, without taking into account the factor of sharp changes in the conditions of the external environment.

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