

# SCIENCE, TECHNOLOGY AND INNOVATION DEVELOPMENT

DOI: 10.15838/esc.2024.1.91.9

UDC 332, LBC 65.9

© Ivanov S.L., Terebova S.V.

## Innovative Entrepreneurship Development in the Region: Challenges and Ways to Address Them



**Semen L.  
IVANOV**

Vologda Research Center, Russian Academy of Sciences  
Vologda, Russian Federation  
e-mail: slivanov2020@mail.ru  
ORCID: 0000-0002-4647-5824



**Svetlana V.  
TEREBOVA**

Vologda Research Center, Russian Academy of Sciences  
Vologda, Russian Federation  
e-mail: svetlana-ter@mail.ru  
ORCID: 0000-0002-2044-9521

**Abstract.** The entrepreneurship sector in a market economy is becoming a major driving force of innovative development. This is due to the fact that in a competitive environment, in order to maximize profit growth, an entrepreneur is forced to produce a more complex and innovative product. Thus, entrepreneurship is an “accelerator” of innovation activity. In this regard, special attention has recently been paid to the activities of innovative entrepreneurship. Research findings allowed us to conclude that at the moment there are a number of issues that hinder the development of innovative organizations. Accordingly, the presence of such challenges impedes innovative economic development. It is especially important to identify these problems at the present time, when innovation has become one of the main national priorities. The aim of the work is to identify problems in innovative entrepreneurship development at the regional level and find ways to solve them. The research methodology involves using various scientific

---

**For citation:** Ivanov S.L., Terebova S.V. (2024). Innovative entrepreneurship development in the region: Challenges and ways to address them. *Economic and Social Changes: Facts, Trends, Forecast*, 17(1), 159–177. DOI: 10.15838/esc.2024.1.91.9

techniques: from general scientific to narrow ones. Special attention is paid to economic sociology methods (expert survey). Scientific novelty of the research consists in the development of tools that help to identify problems in the development of innovative organizations at the regional level. Practical significance lies in the fact that on the basis of the challenges identified, we propose directions to address them, which can be adopted by representatives of regional authorities in order to improve the innovation policy pursued in the region.

**Key words:** region, innovative entrepreneurship, development issues, questionnaire, tools, monitoring.

### Acknowledgment

The research was carried out at the expense of Russian Science Foundation grant 23-28-01841 “Creative practices as a resource for the development of small territories”, <https://rscf.ru/project/23-28-01841/>.

### Introduction

Novelties and innovations are of particular importance for economic growth in country and its regions. Their use in administrative, industrial, and domestic processes significantly determines the level and quality of economic development.

In a market economy, the business sector becomes a major driving force of innovative development. According to Viktor Klavdienko, Doctor of Science (Economics) and leading MSU researcher, entrepreneurship is considered to be the foundation of an innovative economy. According to V.G. Zinov, N.G. Kurakova and A.V. Ozornin, the business sector covers 60–65% of the internal expenses for research and development in innovative leading countries, while the state spends half as much on it (Klavdienko, 2022).

Innovative entrepreneurship is primarily responsible for transforming ideas into technologically new goods, services, and processes in both developed and developing economies. As a result, this type of entrepreneurship has become popular in Russia.

However, the development of innovative entrepreneurship in the Russian Federation and its regions has recently declined. According to the Federal State Statistics Service, the share of innovative goods, works, and services in the total volume of shipped products was only 5.1% in

2022. This falls almost 20 percentage points below the minimum target outlined in the Strategy for Innovative Development of the Russian Federation for the period up to 2020<sup>1</sup>.

Additionally, the targets outlined in Presidential Decree 204 “On national goals and strategic objectives for the development of the Russian Federation for the period up to 2024”, dated May 7, 2018<sup>2</sup>, have not been met.

This situation may have arisen due to the development issues of innovative entrepreneurship in Russian regions (Nikulina, 2013; Trefilova, 2017; Tyutyukina, 2017, etc.). Identifying and resolving these issues should increase the level of innovative development in both the country and regional socio-economic systems.

Identifying the problems and prospects for the development of innovative entrepreneurship in the Russian Federation is a relevant topic. Currently, there is no information available on the develop-

<sup>1</sup> Strategy for Innovative Development of the Russian Federation for the period up to 2020: RF Government Resolution 2227-r, dated October 8, 2011. Available at: <https://docs.cntd.ru/document/902317973> (accessed: September 21, 2023).

<sup>2</sup> On national goals and strategic objectives for the development of the Russian Federation for the period up to 2024: Presidential Decree 204, dated May 7, 2018. Available at: <https://base.garant.ru/71937200/> (accessed: August 15, 2023).

ment problems of innovative entrepreneurship in the regions, and there is no common approach to identifying them. Therefore, the issue of how to properly identify the development problems of innovative entrepreneurship at the regional level is debatable. *This study aims* to address this research problem.

*The object* of research is innovative entrepreneurship in the regions of the Russian Federation.

*The subject* of research is development issues of innovative entrepreneurship.

*The aim* of this work is to identify development issues of innovative entrepreneurship at the regional level and to propose solutions to resolve them.

Scientific novelty of the study consists in the designing of a range of tools for identifying the challenges faced by heads of innovative organizations in the region.

The distinctive feature of this approach is its consideration of the regional nature of innovative activity performed by enterprises (this includes evaluating the impact of regional support measures, identifying regional factors that hinder innovation and entrepreneurial activity etc.), and analyzing specifics of innovative entrepreneurship activity under sanctions and digitalization. This is especially relevant currently.

*Practical significance* lies in the fact that the study proposes solutions to the development problems of innovative entrepreneurship at the regional level, which can be of practical significance for representatives of regional authorities to improve the innovation policy in the region.

### **Materials**

Companies have been operating under the excessive influence of other companies producing similar goods. Customers expect their products to have useful qualities. But these qualities are not yet characteristic of these products. As a result, enterprises are searching for ways to improve the

existing products or to produce new ones and must constantly innovate (Blindenbach-Driessen et al., 2014; Bogers et al., 2011; Gerguri et al., 2010; Prange et al., 2016; Ravšelj et al., 2019). According to the researchers (Garcia et al., 2002), companies need to innovate in order to improve their competitiveness. For instance, through innovation, it is possible to produce the same product in greater quantities or at a lower cost.

To implement innovations, it is necessary to establish production within the country or region. Innovative entrepreneurship plays a crucial role in creating and initiating the innovation process in the market economy, and has become widespread. A review of studies (Brenner, 2020; Grudu, 2019; Guzman et al., 2020; Mayhew et al., 2012; Tang et al., 2004; Ualzahanova et al., 2020; Babkin et al., 2014; Getman et al., 2011; Kadakova, 2014; Menshov, 2005; Palkina et al., 2016; Starodubtseva et al., 2016) has found two groups of criteria for identifying innovative entrepreneurship: general criteria, which are common to innovative entrepreneurship, and specific criteria, which highlight its innovative nature. The first group includes the size, form of incorporation, legal status of the company engaged in innovative entrepreneurship, as well as the tax treatment corresponding to its activity. Entrepreneurial activities are characterized by their risky nature and the systematic pursuit of revenue through certain economic activities. The second group of specific criteria includes development of innovative solutions and the production of innovative products.

Innovative entrepreneurship enterprises are typically private, although there are cases of mixed ownership. These cases usually involve small innovative companies based on higher education institutions, research institutes, and centers, where the higher educational establishment acts as a co-founder. It is important to note that entre-

preneurship is not solely a legal status but also a function performed by natural or juridical persons with the primary goal of earning a profit. State-owned institutions and organizations are also considered business entities. These enterprises can be classified as small, medium-sized, or large businesses based on their size.

Therefore, innovative entrepreneurship is a comprehensive activity, coupled with a certain level of risk and carried out by economic entities officially registered in tax authorities (regardless incorporation and ownership forms and the size of the enterprise). This activity is aimed at earning profit through development of, manufacture and sale of innovative goods and provision of innovative works and services (Ivanov, 2021).

According to researchers (Cuervo-Cazurra et al., 2007; Gerguri et al., 2010; Janssen et al., 2022; Ravšelj et al., 2019; Ravšelj et al., 2020), companies engaged in innovative entrepreneurship and focused on R&D make a significant contribution to the development of the regional economy. This opens up opportunities to develop new markets, create high-tech jobs, increase employment, and produce quality products that meet consumer demand. The researchers (Bikmetov, 2018; Malinina, 2021; Sevryukova, 2020; Filippova et al., 2017) share this opinion. They also state that innovative entrepreneurship is the crucial factor in maintaining competitiveness of the regional economy.

However, the conditions for the development of innovative entrepreneurship within individual territories can vary significantly. Economic entities involved in innovative activities often face challenges that hinder their development (Trefilova, 2017; Tyutyukina, 2017).

Currently, academics conduct research to identify issues that may have a negative effect on innovative entrepreneurship. Similar studies have been conducted in developed countries, such as the USA and EU (Dunning et al., 1995; Koschatzky et

al., 2000). In developing countries that have recently taken the path of innovative development, such as Brazil, similar research is just gaining popularity (Rocha et al., 2022).

Since the beginning of innovative development in the Russian Federation, priority has been given to innovative business organizations. Identifying problems and prospects of their activities has become the subject in many studies devoted to the innovative development. Most of these studies were conducted before 2010, possibly due to the government's recognition of the innovation importance in ensuring the competitiveness of the national economy during this period (Burkina, 2020; Gretchenko, 2011).

The study (Nikulina et al., 2013) identifies the primary problems that companies experience in the process of innovation development, proposes solutions to them, and emphasizes the need to develop new sources of financing for the implementation of innovative activities and to optimize the provision of state support for companies that bring innovative goods to the market.

The authors (Grebennikova et al., 2016; Trefilova, 2017) examine the issues of innovative development in companies under current market conditions. They note that Russia is significantly behind in forming innovative cluster compared to leading world powers. This situation results in Russian companies being dependent on imported technologies and goods. Among the issues hindering innovative development in the Russian Federation, the researchers note ineffectiveness of scientific research due to insufficient funding, immigration of the best scholars, unattractiveness of the scientific profession, the gap between education and science.

The solutions to the outlined problems (Grebennikova et al., 2016) lie in modernizing the funding system for applied and fundamental research and development, establishing a regulatory

framework and stimulating demand for scientific inventions, creating a system for monitoring and developing innovative activity.

The Federal State Statistics Service (Rosstat) surveys the issues of business' innovative activity. The assessment of these issues conducted as a part of the study (Tyutyukina et al., 2017) allowed the authors to identify the key problems of innovative development in the Russian Federation. They are lack of own funds, high cost of innovations, lack of funding support from the state, insufficient laws and regulations to control and stimulate innovative activity, lack of skilled personnel.

However, the problems identified by Rosstat represent the entire country, as the regional specifics was not taken into account. Moreover, The Federal State Statistics Service collects information on issues of innovative activity once every two years (Tyutyukina et al., 2017): the next year after an odd-numbered year, including data for the last two years (for example, in 2022 – for 2018–2020; in 2020 – for 2016–2018, etc.). Therefore, there is no opportunity to assess the current state of innovative companies.

Scientists are working on developing methods and mechanisms to rapidly search for information on problems that hinder the development of innovative businesses in the country and the regions. The article “Innovative Activity of Russian Companies: The Results of Empirical Research” can be taken as an example. It presents the results of a complex analysis method for evaluating the innovative activities of companies using the “Innovation Radar” methodology (Rebyazina et al., 2011). The study consisted of two stages: conducting 15 in-depth interviews at the qualitative stage and surveying 120 Russian innovative enterprises. Conclusions about the impact of certain characteristics of Russian companies' innovative activity on their efficiency were formulated based on the analysis results.

In 2021, the Russian Union of Industrialists and Entrepreneurs conducted a survey on the innovative activity of Russian enterprises<sup>3</sup>. The survey primarily included industrial companies (63.8% of the respondents). Two-thirds of respondents represented large businesses, 21.8% – small businesses, and 11.5% classified themselves as medium-sized businesses.

According to the respondents, the primary factors influencing innovative activity of their enterprises are financial and economic. The option “high costs of innovations implementation” received an average score of 7.2 out of 9, while “economic risks” received 7 points. Difficulties in obtaining borrowed funds for investment in innovation projects and excessive state regulation and standards requirements shared third place, both with a score of 5.4. Other factors have less impact on a company's innovative activity.

The companies also reported that political factors were the primary limitation to their exports, with a share of 35.9%. Export companies rated these factors even higher – 53.3%, and this difference is statistically significant.

Besides surveys, in-depth interviews are frequently used to identify the issues and opportunities related to innovative activity. On September 2, 2020, Leonid Gokhberg, director of HSE Institute for Statistical Studies and Economics of Knowledge, was interviewed by Rossiyskaya Gazeta newspaper. During the interview, they discussed the challenges of innovative development faced by Russian companies and the factors that influence them<sup>4</sup>.

<sup>3</sup> Innovative activity of companies: the results of the RSPP survey. The Russian Union of Industrialists and Entrepreneurs. Available at: <https://rspp.ru/activity/analytics/innovatsionnaya-deyatelnost-kompaniy-rezultaty-oprosarspp/> (accessed: August 25, 2023).

<sup>4</sup> Innovation performance in Russia does not meet expectations. *Rossiyskaya gazeta*. Available at: <https://rg.ru/2020/11/30/rezultaty-innovacionnoj-deiatelnosti-v-rossii-okazalis-nizhe-ozhidaniia.html> (accessed: August 25, 2023).

According to Gokhberg, the state has recently strongly focused on innovative development. Despite the presence of numerous strategies and support measures, and considerable costs, innovative policy has not produced significant results. Furthermore, there is a noticeable stagnation in the major indicators of the innovative sphere, particularly in the level of innovative activity.

Gokhberg suggests that improving the environment for innovation, stimulating competition and involving a wide range of small and medium-sized businesses into innovative activities can help to solve existing problems.

Specialists from HSE University (D. Medovnikov, T. Oganessian, and S. Rozmirovich)<sup>5</sup> conducted a survey of 125 small and medium-sized Russian companies to collect objective data on the innovation market. In addition, 15 company executives were interviewed.

The survey involved companies from over 30 constituent entities of the Russian Federation, belonging to the following federal districts: Central, Volga, Northwestern, Siberian, Ural, North Caucasus, Far Eastern.

In the survey, companies were asked to identify the factors that limited their development in the previous three years. The most common response, with 50% of votes, was a lack of funds for R&D as well as for new product development. The second most common response, with 36% of votes, was difficulties in obtaining funds for the implementation of investment projects, either in the form of investments or investment loans. The third most common response, with 34% of the votes, was a skills shortage.

<sup>5</sup> Use of state support by small and medium-sized businesses operating in the field of innovation and high technologies. HSE University. Available at: <https://innopraktika.ru/napravleniya-deyatelnosti/proekty-razvitiya/issledovanie-msp/> (accessed: August 30, 2023).

The survey asked the respondents about their enterprise's use of loans over the past three years. The results showed that approximately 40% of executives had experience with borrowed funds, but only half of them did so regularly. Around 60% of organizations did not use loans at all.

Approximately 30% of companies do not consider attracting investments as necessary at the moment. Similarly, 29% of the companies wish to attract investments but have been unsuccessful in doing so. Only slightly over 20% of companies have successfully attracted investments within the last three years.

According to the survey, federal grants were the most common form of government support. Over 70% of participating companies reported their use. 47% of nonfinancial support was provided through tradeshows and business missions, while 39% was provided through free educational programs.

More than 50% of respondents consider that state support has a positive impact on their enterprise's development.

In the interim result, it can be stated that many scientists have focused on researching innovative entrepreneurship in Russia. This topic has gained popularity in the last decade because the government has realized the importance of innovations as a crucial factor determining the social and economic development.

Various methods are used to identify problems in the development of innovative entrepreneurship, with sociological methods such as expert surveys and interviews etc. being the most common. Generally, these methods are preferred due to the limited statistical data for assessing the scale of problems related to the development of innovative entrepreneurship. Sociological methods are also important because they allow for both quantitative and qualitative assessments of the problems under consideration. These methods enable the assessment of both the scale and specifics. Moreover, they

allow making detailed recommendations from representatives of innovative entrepreneurship (experts, executive and leading specialists of innovative enterprises) for the solution of certain problems, which subsequently need to be taken into account by regional authorities in the process of making management decisions.

When conducting sociological surveys on innovative entrepreneurship, some scientists, for example from HSE University, only include small and medium-sized innovative companies in the sample. At the same time, there are also examples when the range of interviewed companies is not limited to innovative small and medium-sized businesses, as in the case of the survey conducted by the Russian Union of Industrialists and Entrepreneurs.

Excluding large innovative businesses from the analysis is appropriate, as their size largely determines the prerequisites of their innovative activity. According to the study (Terebova, 2019), small innovative firms can promptly respond to changes in the competitive environment and provide sufficient mobility in the field of commercialization of innovations due to their flexible management structure.

Furthermore, it is important to consider the qualitative differences between innovations produced by small, medium, and large enterprises. Goods and services created by small and medium-sized innovative companies tend to be more innovative than those produced by larger business; 4/5 of the output of innovative small and medium-sized businesses is related to production renewal, while technological innovations produced by industrial giants are primarily aimed at their own production processes. Small innovative enterprises produce 2.5 times more innovations per employed person than large companies (Terebova, 2019).

Research centers such as HSE University and public organizations like the Russian Union of Industrialists and Entrepreneurs conduct sociological studies to identify development issues of innovative entrepreneurship in the Russian Federation. Additionally, a number of authors have published their findings of sociological research (Rebyazina et al., 2011). The scientific and practical significance of these works is noteworthy. However, most of them are episodic, which limits the ability to assess relevant problems. Moreover, they do not consider the regional nature of innovative entrepreneurship (for example, evaluating the effectiveness of regional support measures or identifying regional conditions that hinder the development of innovative entrepreneurship).

#### Methods

The research methodology is based on various scientific methods, including document analysis, result analysis, comparative method, etc. Questionnaire survey, a method of economic sociology, was used to conduct an expert survey to identify development issues of innovative entrepreneurship in the regions.

It is important to note that several questions in the author's questionnaire correspond in terms of content and structure to questions presented in other sociological studies conducted by leading domestic scientific, research, and educational institutions (specifically, in research carried out by HSE University<sup>6</sup>). This was possible due to comparative analysis of the situation in the region and within the whole country, identification of regional specifics of development issues of innovative entrepreneurship.

<sup>6</sup> Use of state support by small and medium-sized businesses operating in the field of innovation and high technologies. HSE University. Available at: <https://innopraktika.ru/napravleniya-deyatelnosti/proekty-razvitiya/issledovanie-msp/> (accessed: August 30, 2023).

### *Characteristics of the survey*

The survey involved the executives of small and medium-sized innovative enterprises in the Vologda Region. The majority of these enterprises are engaged in manufacturing industries, professional, scientific, technological activities, and activities in the field of information and communication, as classified by OKVED (Russian Classification of Economic Activities). The survey involved 11 executives of small innovative enterprises (Alexandra Plus LLC, VBK LLC, Kronles LLC, Logasoft LLC, Mezon LLC, Modul-F LLC, Octava Plus LLC, Optimeh LLC, Rotor LLC, Sevzapdorproekt LLC). The questionnaires were sent to 35 small innovative enterprises<sup>7</sup> in total.

To be categorized as innovative, an enterprise should have innovative products that make up a significant portion of their total shipped products.

The questionnaire consists of 52 questions categorized into different theme groups, including general organizational characteristics, specifics of produced innovations, performance assessment of innovative entrepreneurship, factors hindering innovative activity, factors promoting innovative activity, and innovative entrepreneurship activity under sanctions.

The sociological survey was conducted from February 1 to April 1, 2023, at the respondents' workplace. The respondents were executives of innovative enterprises in the region, as well as heads and leading specialists of structural units responsible for innovation activities.

The survey database is registered with the Federal Service for Intellectual Property under state copyright certificate number 2023622390, dated July 13, 2023.

<sup>7</sup> Science and innovations in the Vologda Region during 2018–2022. Rosstat. Available at: <https://35.rosstat.gov.ru/folder/55314/document/217517> (accessed: September 1, 2023).

### **Results and discussion**

*Current State of Innovative Entrepreneurship in the Region. Features and issues of regional support for innovative entrepreneurship.* Our expert survey results reveal that the companies primarily aim to expand their product range (54.5%), enter new markets and gain a competitive advantage (45.5%), and reduce production costs while improving product quality (36.4%).

An important issue regarding the companies surveyed is their provision with innovative solutions that serves as the basis for producing innovative products. According to 45.5% of executives, the companies produce innovative solutions themselves. 45.5% of respondents reported purchasing innovative solutions from other Russian innovative companies. Approximately 18% of companies acquire innovative solutions from Russian higher educational establishments, research institutes and centers. Another 18.2% of respondents focus on foreign innovative companies (the territorial affiliation of these companies was not specified). It is important to note that the most common types of intellectual property available to these companies are patents for inventions, accounting for 45.5%. Utility models, computer software programs, and trademarks make up only 27.3% of the total, while registered designs and procedural knowledge account for just 9.1%.

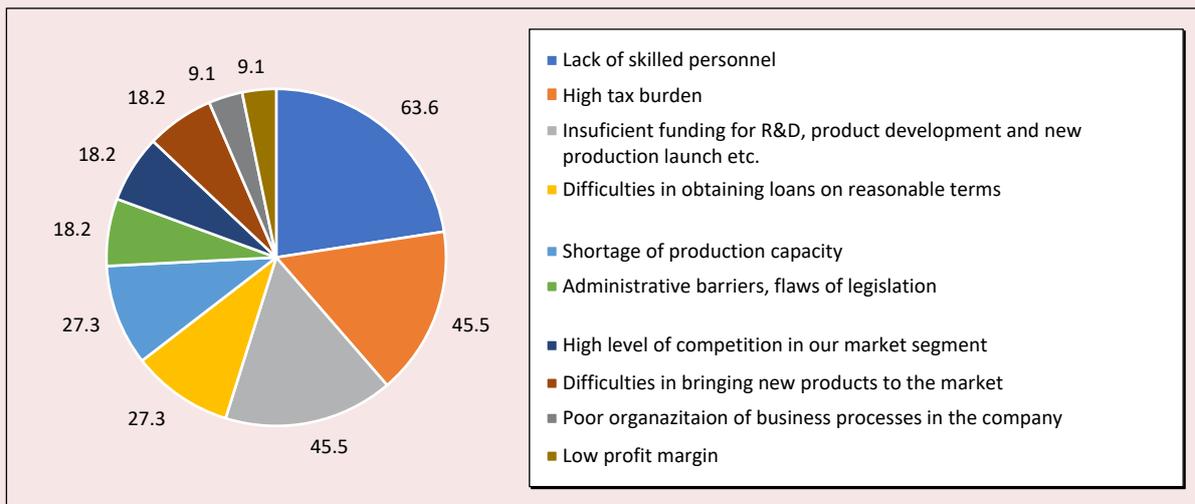
The survey revealed the factors that, in the opinion of respondents, hinder innovative enterprises in the Vologda Region (*Fig. 1*).

The figure illustrates that primary factors limiting innovative entrepreneurship at the regional level are lack of skilled personnel, high tax burden, insufficient funding for R&D, product development, and new production launch. Additionally, entrepreneurs face challenges in obtaining loans on reasonable terms.

Assessment of the degree to which innovative small and medium-sized enterprises in the region are equipped with the necessary resources to produce new products and implement new technologies indicates that the majority of respondents point out the lack of skilled personnel (Fig. 2).

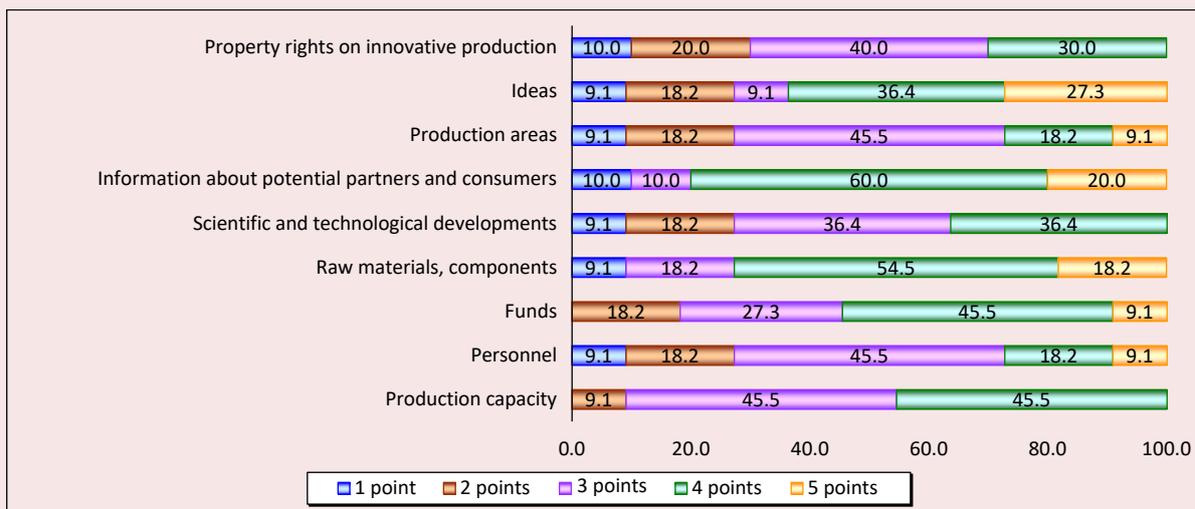
Meanwhile, small innovative entrepreneurship does not experience the shortage of raw materials, components, and information about potential partners and consumers. Additionally, enterprises in the region have ample ideas for innovation development.

Figure 1. Factors limiting innovative entrepreneurship in the region, %



Source: survey results.

Figure 2. Resource equipment for small and medium-sized businesses in the region to launch new production and implement new technologies, %



Source: survey results.

Credits and loans are important instruments for providing financial support to innovative small and medium-sized enterprises. According to the survey, only 18.2% of innovative enterprises in the Vologda Region use loans on a regular basis, while 36.4% use them from time to time.

Difficulties in obtaining loans include high interest rates (50%), banks considering innovative projects as risky (25%), and a significant credit burden (presence of other outstanding loans) according to a quarter of the respondents. However, 25% of respondents reported having no difficulties in obtaining loans.

The Fund for Resource Support of Small and Medium-Sized Entrepreneurship of the Vologda Region offers loans up to five million rubles for a period of 36 months<sup>8</sup>. The interest rate for the loan ranges from 1 to 16% per annum, depending on the loan category. This type of financial support enables borrowing money on more favorable terms. However, the loan amount limitation of five million rubles hinders the development of innovative production. According to the answers given by 50% of the surveyed executives of small and medium-sized innovative enterprises in the region, the ideal amount of borrowed funds should be between 20 and 50 million rubles.

In the region, only 22% of small and medium-sized innovative enterprises were able to attract and use investments over the last three years. It is worth noting that potential investors' awareness is low, with 73% of the respondents rating it no more than 3 out of 5 points.

State support implemented by the Department of Economic Development of the Vologda Region is widespread among small and medium-sized innovative enterprises in the region. Approximately 64% of the executives of innovative companies in the region use these forms of support on a regular basis due to their grant nature. However, the effectiveness of these measures is estimated to be relatively low (*Tab. 1*).

The experts evaluated the financial support measures implemented at the regional level as less effective than similar measures implemented at the federal level. They gave a particularly low assessment of the effectiveness of regional grants. Approximately 45% of respondents expressed that the amount of regional grants provided is insufficient to support innovation activities at a high level. All of executives of small and medium-sized enterprises who participated to the survey believe that the minimum amount of a regional grant should be 5 million rubles. The grant offered by the Vologda Region for funding research, development

Table 1. Effectiveness of support for small and medium-sized entrepreneurship in the region, %\*

Support measures	Points				
	1 point	2 points	3 points	4 points	5 points
1) Federal grants	14.3	–	–	14.3	71.4
2) Regional grants	28.6	28.6	14.3	–	28.6
3) Subsidies from the federal budget	57.1	–	–	28.6	14.3
4) Subsidies from the regional budget	57.1	–	14.3	–	28.6

Source: survey results.  
\*Note: the scoring is based on the use of a particular support measure by executives of innovative enterprises.

<sup>8</sup> Microcredit company of the Vologda Region “The Fund for Resource Support of Small and Medium-Sized Entrepreneurship”. My business 35 (National support project for small and medium-sized businesses. Available at: <https://mb35.ru/st/fond-resurnoy-podderzhki/> (accessed: 30 August, 2023).

and technological works of natural persons and organizations, excluding federal state institutions, amounts to only 500 thousand rubles<sup>9</sup>.

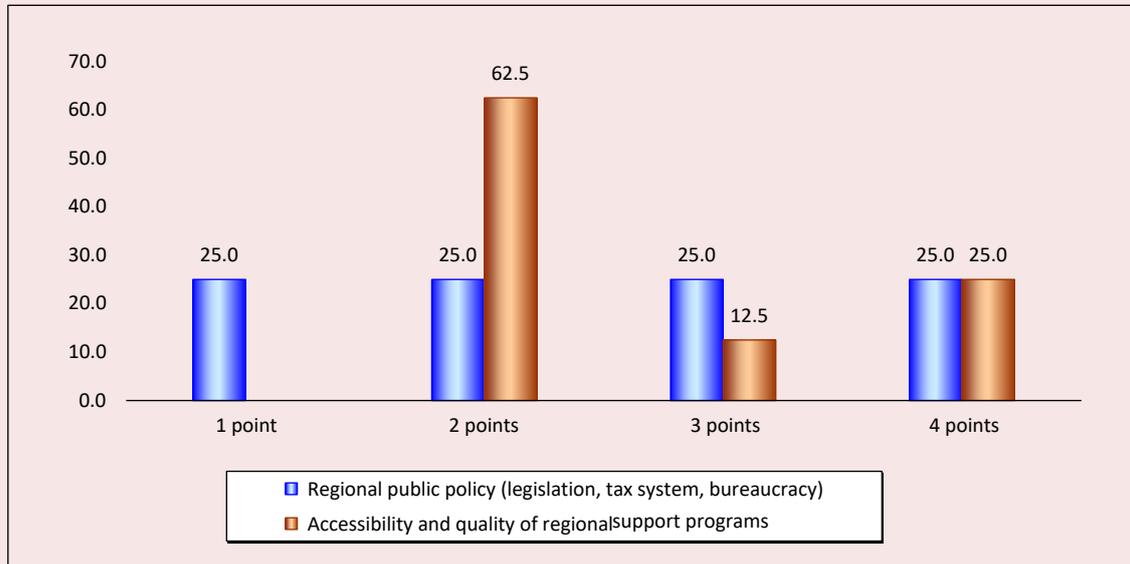
The monitoring survey results indicate that the current duration of regional grants is not appropriate for the development of innovative activity of enterprises. According to 45.5% of the entrepreneurs, grants should be provided for a period of 3 years or more. Approximately 82% of respondents noted that becoming a regional grant owner is a difficult task. The number of vacancies is small, and the criteria for selecting grantees, including by type of economic activity, are significantly limited.

The effectiveness of administrative support measures in addressing issues important for innovative companies remains at a low level (*Fig. 3*).

The regional state programs' availability and quality, as well as the effectiveness of the regional state policy in developing innovative entrepreneurship, received a low score on a five-point scale.

This study aims briefly to touch upon the foreign economic activity of innovative companies of the region under the economic recession. According to 40% of the executives of companies that export or used to export innovative products, export supplies to North America, the European Union etc. have significantly decreased in recent years. At the same time, approximately 20% of respondents have observed an increase in export opportunities to the friendly countries, such as Argentina, Belarus, Brazil, and Iran.

Figure 3. Effectiveness of administrative and legal support for small and medium-sized entrepreneurship in the region, %



Source: survey results.

<sup>9</sup> Regional scientific grants. Official website of the Government of the Vologda Region. Available at: [https://vologda-oblast.ru/biznesu/nauka\\_i\\_innovacii/oblastnye\\_nauchnye\\_granty/](https://vologda-oblast.ru/biznesu/nauka_i_innovacii/oblastnye_nauchnye_granty/) (accessed: September 17, 2023).

*The activity of small and medium-sized innovative entrepreneurship under the conditions of the region's economy digitalization.* In modern conditions, innovative activity is focused on creating and implementing digital technologies, products and services in the economy. The development of innovative activity in the digital economy becomes a driver of economic growth and a means of increasing enterprises' competitiveness nationally and globally (Yanchenko, 2023).

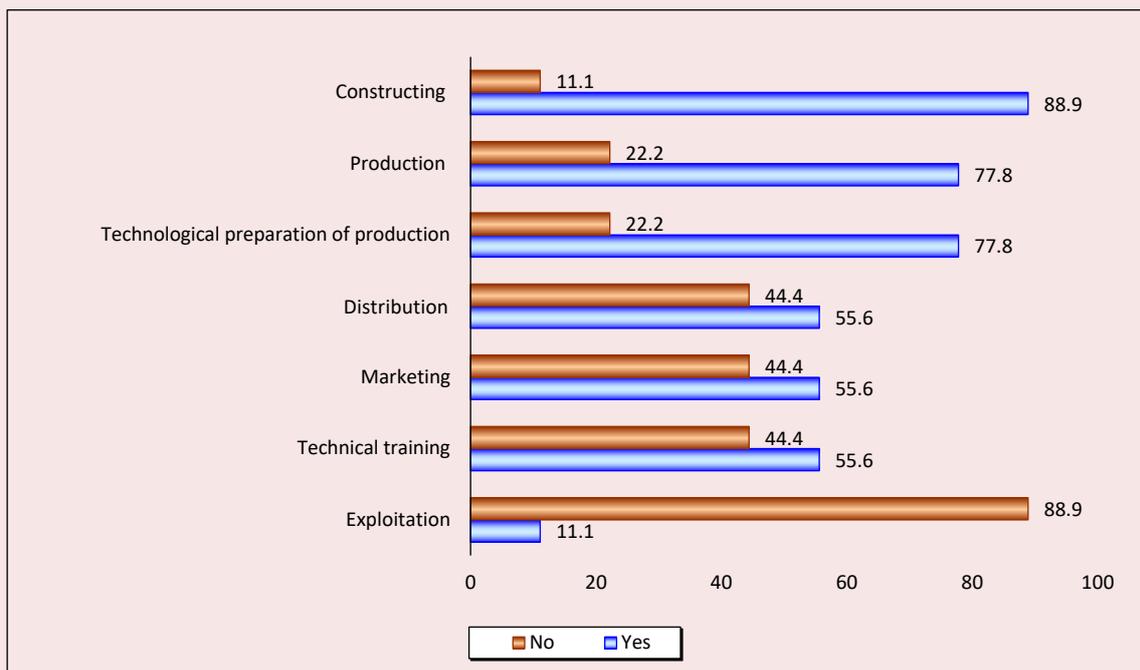
The survey revealed that a significant proportion of small and medium-sized innovative enterprises in the Vologda Region have a high level of digital maturity. 45.5% of executives of

innovative enterprises in the region reported on successful implementation of several projects using digital technologies. Moreover, 36.4% of the region's small and medium-sized innovative companies are engaged in the development of such technologies.

Among the most widespread directions mastered by innovative entrepreneurship of the region are new production technologies; 45.5% of the regional innovative enterprises are engaged in their development.

It is important to note that digital technologies are widely used throughout the entire product life cycle (Fig. 4).

Figure 4. Digital technologies usage throughout the product life cycle of an enterprise, %



Source: survey results.

Finally, the respondents were asked about the steps their companies are taking to increase the use of digital technologies. According to the respondents, companies provide regular training for relevant employees and learn best practices from other organizations (66.7%). Only a small percentage of the companies (22.2%) hire new employees with experience of implementing and using digital technologies.

Let us consider the measures of state support for innovative entrepreneurship in the context of digitalization being implemented within the territory of the Vologda Region.

In 2022, based on the proposals of the business community, tax rates for OKVED codes 62.01, 62.02, 62.02.1, 62.02.4, 62.03.13, 62.09 and 63.11.1 were reduced under the simplified tax system for the information and communication technology sector and set at<sup>10</sup>:

- for the object of taxation “income” – 1%,
- for the object of taxation “income minus expenses” – 5%.

The development institutions of the Vologda Region continue to offer various regional support measures for IT companies including consultations, training, promotion of goods and services, certification and production permits, subsidies, grants, soft loans and loan agreements, export promotion. As of July 1, 12 IT companies and sole proprietorships have received information and consulting support, including guidance on export and intellectual property issues<sup>11</sup>.

Among them was TELEMEDHAB LLC, the company implementing a project for the remote

patient monitoring. A special application automates the function of collecting data from medical and nonmedical devices that determine the current state of a person’s health<sup>12</sup>.

According to I.V. Prosviryakova, head of the Department of Digital Development of the Vologda Region, substantial support is provided for the IT industry. The provided benefits and support lines are very diverse. Useful information is posted on popular websites to make it easier IT companies to access it. The creation of thematic chat rooms enables IT companies to stay up-to-date with the latest news, share opinions, ask questions, and communicate with colleagues on relevant topics<sup>13</sup>.

At the same time, according to the survey results, innovative IT companies rate regional support measures poorly. Specifically, they rated the effectiveness of administrative support measures at 3 out of 5 points. Moreover, 50% of innovative IT companies rated the effectiveness of regional financial support, specifically regional grants, as only 2 out of 5 points.

The study shows that despite the focus on developing innovative entrepreneurship in the Vologda Region (as stated in the region’s Social and Economic Development Strategy) and in the country, innovative enterprises of the region are currently facing a large number of obstacles hindering their business activities. Furthermore, the effectiveness of the measures of state support provided by regional authorities, which are a crucial factor in overcoming these challenges, cannot be considered.

<sup>12</sup> Ibidem.

<sup>13</sup> The Department of Digital Development created digital media to inform IT companies about support measures for them. Available at: [https://vologda-oblast.ru/novosti/departament\\_tsifrovogo\\_razvitiya\\_zapustil\\_elektronnye\\_resursy\\_s\\_merami\\_podderzhki\\_it\\_kompaniy/](https://vologda-oblast.ru/novosti/departament_tsifrovogo_razvitiya_zapustil_elektronnye_resursy_s_merami_podderzhki_it_kompaniy/) (accessed: September 17, 2020).

<sup>10</sup> IT companies in the Vologda Region can use the regional support measures. Available at: [https://vologda-oblast.ru/novosti/vologodskie\\_it\\_kompanii\\_mogut\\_vospolzovatsya\\_regionalnymi\\_merami\\_podderzhki/](https://vologda-oblast.ru/novosti/vologodskie_it_kompanii_mogut_vospolzovatsya_regionalnymi_merami_podderzhki/) (accessed: September 28, 2023).

<sup>11</sup> Ibidem.

The conclusion is supported by official statistics. Vologdastat shows a decline in innovative activity among organizations in the Vologda Region over the past three years, dropping from 12.2% in 2020 to 9.3% in 2022. The indicator values in the Vologda Region in 2022 were lower than in the Northwestern Federal District and within the Russian Federation (by 1.3 and 1.7 percentage points respectively). Furthermore, in the Vologda Region, the proportion of innovative goods, works and services (relative to the total volume of innovative products) has decreased significantly from 1.9% in 2020 to 0.7% in 2022. The value of 0.7% is one of the lowest on the territory of the Northwestern Federal District, second only to the Pskov Region with the value of 0.4%. On average, the proportion of innovative products within Northwestern Federal District was 5.7% and 5.1% across the Russian Federation.

### Conclusion

In summary, small and medium-sized innovative businesses of the Vologda Region face various challenges. These include a lack of skilled personnel to produce innovative products, insufficient funding for innovative entrepreneurship at the regional level, high tax burden, flaws in legislation regulating innovative entrepreneurship in the regions, and decline in foreign trade with regular counterparties.

The reasons for this situation lie not only in the shortcomings of state support (financial and economic, administrative and legal, informational and organizational) but also in the regional specifics of innovative activity development, caused, among other things, by the monostructural specialization of economic activity. This type of specialization requires a monopolistic or an oligopolistic reaction model of large innovative businesses to the innovations produced in the region. A number of experts, including Doctor of Science

(Chemistry) B.D. Sviridov, a scientific consultant of Cherepovets State University and Doctor of Science (Economics) K.A. Zadumkin, executive director of the Russian Union of Industrialists and Entrepreneurs of the Vologda Region in the city Vologda, represent this stance (Ivanov, 2023).

Certain issues partially stem from the foreign economic climate. Before 2022, when a record number of various sanctions were imposed on the Russian Federation and its regions, the main foreign economic partners of the Vologda Region, along with the Republic of Belarus, were the countries of the European Union (especially Finland and Poland)<sup>14</sup>. The new geopolitical conditions have compelled enterprises to sever commercial ties with foreign partners. According to the several executives of innovative companies in the region, this caused in a decline in their innovative activity.

Simultaneously, there exist some systemic problems, including the low level of job skill training in the field of innovative activity.

Analyzing the nature of these issues allowed us to identify ways for their resolution (*Tab. 2*).

The proposed measures can be addressed to the Department of Economic Development of the Vologda Region, the Department of Digital Development of the Vologda Region, the Education Department of the Vologda Region, to the managers of the Agency of Development of Business And Investments of the Vologda Region “My business”, to the members of the Vologda Chamber of Commerce and Industry.

<sup>14</sup> Since the beginning of 2021, the volume of foreign trade between Vologda Region and the Republic of Belarus has increased by 40.5%. Available at: <https://gryazovets.bezformata.com/listnews/vologodskoy-oblasti-s-respublikoy-belarus/100474512/> (accessed: October 17, 2023).

Table 2. Development issues of small and medium-sized innovative entrepreneurship and ways to address them

Issue	Solution
Lack of skilled personnel to produce innovative products	<ol style="list-style-type: none"> <li>1. To provide required professional training guidelines on the basis of regional educational institutions*.</li> <li>2. To attract innovative qualified personnel from abroad (country's biggest allies) and other regions*.</li> </ol>
Insufficient funding for innovative entrepreneurship at the regional level	<ol style="list-style-type: none"> <li>1. The regional authorities should request an increase in the volume of federal funds for the development of innovation activities in the region**.</li> <li>2. To allocate the existing financial resources among innovative businesses in a rational manner***.</li> <li>3. To expand the list of state financial support tools.</li> <li>4. To stimulate the development of venture capital funds and angel investment.</li> <li>5. To create conditions that will attract investors to the region and increase its innovative and investment potential.</li> </ol>
High tax burden	<ol style="list-style-type: none"> <li>1. To expand the list of criteria for innovative businesses to benefit from tax incentives. For instance, in addition to new innovative companies that have been operating on the market for less than two years, tax incentives should be provided to companies experiencing financial difficulties.</li> <li>2. To remove the dependence of an innovative company on a specific tax system.</li> </ol>
Flaws in legislation regulating innovative entrepreneurship in the regions	<ol style="list-style-type: none"> <li>1. To create a legal instrument regulating that regulates the activities of small and medium-sized innovative entrepreneurship at the regional level and takes into account its specifics.</li> <li>2. To specify the mechanism for meeting the targets related to development of innovative entrepreneurship, outlined in the Strategy for Innovative Development of the Russian Federation for the period up to 2030.</li> <li>3. To minimize the number of administrative barriers for regional innovative businesses.</li> </ol>
Reduction in foreign trade with regular counterparties	To develop trade cooperation with counterparties from the friendly countries.
<p><b>Notes:</b></p> <p>* It is important to note that large innovative businesses can ensure the qualified staff inflow by creating their own education institutions and providing employer-sponsored education. However, small innovative businesses typically do not have such opportunity. In this case, the state's role is crucial in assisting regional higher educational establishment and vocational high schools with profile orientation and in creating conditions for innovative staff who are prepared to work for regional innovative companies.</p> <p>** To accomplish the task, it is necessary to increase the interest of the regional companies in participating in initiatives implemented by regional authorities to support innovative entrepreneurship. Although regional support measures are the most common, some of them, such as subsidies for small innovative enterprises to implement innovative projects, remain unclaimed. This, in turn, hinders the submission of requests for increasing the volume of funding to the federal authorities.</p> <p>*** In this case, it is important to create a feedback mechanism between the representatives of regional authorities and innovative business. This will help to identify whether financial support is highly required or not, the amount of support needed and other relevant details. Additionally, it is important to pay special attention to the assessment of the viability of innovative projects, as well as the possibility of solving regional development problems on their basis.</p>	

The implementation of the proposals will allow solving the issues of innovative entrepreneurship development in the region. At the same time, it will require significant financial investments. Therefore, the regional authorities need to apply for an increase in the volume of funding the measures to support innovative entrepreneurship, taking into account the established thresholds characterizing their quantitative parameters (the regional scientific grants amount for innovative entrepreneurship should not be less than 5 million rubles).

When estimating the expenses from the regional budget for attracting innovative personnel to the region, it is important to take into consideration the average wage of similarly qualified staff in other regions, including those that are more economically developed.

However, some activities do not require significant financial investment, such as lawmaking (developing relevant regulatory legal acts or crea-

ting investment passports for some municipal formations). Interaction between the region's authorities and scientific organizations located on the territory of the region will play a special role. The staff of these organizations could provide consulting support.

The proposals are expected to have positive social and economic effects, including increased competitiveness of the region both in the Russian and international markets due to the innovative output growth, import phaseout capacity building, including software tools, and the solution of some social problems through the introduction of relevant innovations such as improving the urban environment and making the production process more environmental friendly.

The proposals are supposed to resolve the development issues of innovative entrepreneurship development at the regional level. This should positively impact the quantitative and qualitative indicators of innovative activity in the region.

## References

- Babkin A.A., Chistyakova O.V. (2014). Development of innovative entrepreneurship in Russia: concept, dynamics, problems, directions of development. *Ehkonomicheskoe vozrozhdenie Rossii=The Economic Revival of Russia*, 4 (42), 157–170 (in Russian).
- Bikmetov R.S. (2018). Strategy of transformation of Russian “post-Soviet” gradow-forming enterprises in innovative organizations. *Vestnik UGNTU=Bulletin USPTU. Science, Education, Economy*, 3(25), 81–87 (in Russian).
- Blindenbach-Driessen F., Ende J. (2014). The locus of innovation: The effect of a separate innovation unit on exploration, exploitation, and ambidexterity in manufacturing and service firms. *Journal of Product Innovation Management*, 31(5), 1089–1105. DOI: 10.1111/jpim.12146
- Bogers M., Lhuillery S. (2011). A functional perspective on learning and innovation: Investigating the organization of absorptive capacity. *Industry and Innovation*, 18(6), 581–610. DOI: 10.1080/13662716.2011.591972
- Brenner T. (2020). The ETH innovation & entrepreneurship lab: Supporting young entrepreneurs. *CHIMIA*, 74(10), 768–770.
- Burkina T.A. (2020). Scientific and industrial cooperation in innovation sphere. *Vestnik evraziiskoi nauki=The Eurasian Scientific Journal*, 6, 1–9.
- Cuervo-Cazurra A., Un C.A. (2007). Regional economic integration and R&D investment. *Research Policy*, 36(2), 227–246. Available at: <https://doi.org/10.1016/j.respol.2006.11.003>

- Dunning J.H., Narula R. (1995). The R&D activities of foreign firms in the United States. *International Studies of Management & Organization*, 25(1-2), 39–73. Available at: <https://doi.org/10.1080/00208825.1995.11656651>
- Filippova I.A., Krasil'nikova E.E. (2017). The innovative and import-substitution cluster in the contemporary economy of Russia. *Natsional'nye interesy: priority i bezopasnost' = National Interests: Priorities and Security*, 7 (352), 1283–1305 (in Russian).
- Garcia R., Calantone R. (2002). A critical look at technological innovation typology and innovativeness terminology: A literature review. *Journal of Product Innovation Management*, 19(2), 110–132. DOI: 10.1111/1540-5885.1920110
- Gerguri S., Ramadani V. (2010). The impact of innovation into the economic growth. *MPRA Paper*, 22270, 1–23.
- Getman B.M., Nenakhova O.A., Chistova V.A. (2011). Commercialization of innovative activities and essence of innovative entrepreneurship. *Vestnik Donskogo gosudarstvennogo tekhnicheskogo universiteta = Advanced Engineering Research (Rostov-on-Don)*, 5(56), 758–767 (in Russian).
- Grebennikova V.A., Gorlopan M.A. (2016). Development of innovative activity of the companies under financial instability. *Juvenis Scientia*, 3, 44–46 (in Russian).
- Gretchenko A.A., Manakhov S.V. (2011). Innovation in Russia: History, modern time and prospects. *Kreativnaya ehkonomika = Creative Economy*, 3(51), 76–83 (in Russian).
- Grudu R. (2019). The role of innovative entrepreneurship in the economic development of EU member countries. *Journal of Entrepreneurship, Management and Innovation*, 15(1). DOI: 10.7341/20191512. Available at: <https://jemi.edu.pl/vol-15-issue-1-2019/the-role-of-innovative-entrepreneurship-in-the-economic-development-of-eu-member-countries>
- Guzman J., Joohyun Oh J., Sen A. (2020). What motivates innovative entrepreneurs? Evidence from a global field experiment. *Management Science*, 66(10), 4808–4819.
- Ivanov S.L. (2021). Analysis of the essence and state of innovative entrepreneurship in the conditions of the modern Russian economy. *Aktualnye problemy ehkonomiki i menedzhmenta = Actual Problems of Economics and Management*, 4 (32), 77–91 (in Russian).
- Ivanov S.L. (2022). Improving the instruments of state support for regional innovative entrepreneurship (on the example of the Vologda Region). *Voprosy regionalnoi ehkonomiki*, 4, 29–36.
- Ivanov S.L. (2023). Directions for the development of innovative activity in regions with a single industry structure of the economy. *Problemy rynochnoi ekonomiki = Market Economy Problems*, 1, 88–101. DOI: <https://doi.org/10.33051/2500-2325-2023-1-88-101> (in Russian).
- Janssen M.J., Abbasiharofteh M. (2022). Boundary spanning R&D collaboration: Key enabling technologies and missions as alleviators of proximity effects? *Technological Forecasting and Social Change*, 180, 121689(1-14). Available at: <https://doi.org/10.1016/j.techfore.2022.121689>
- Kadakoeva G.V. (2014). Innovative entrepreneurship: the nature, types and possibilities of development in Russia. *Voprosy innovatsionnoi ehkonomiki*, 2, 3–12 (in Russian).
- Klavdienko V.P. (2022). State support for research and innovation in the business sector: foreign experience. *Obshchestvo i ekonomika = Society and Economy*, 9, 38–48 (in Russian).
- Koschatzky K., Sternberg R. (2000). R&D cooperation in innovation systems – some lessons from the European regional innovation survey (ERIS). *European Planning Studies*, 8(4), 487–501.
- Malinina T.B., Lazareva E.N. (2021). Innovations as a key factor in enhancing regional competitiveness. *Zdorov'e – osnova chelovecheskogo potentsiala: problemy i puti ikh resheniya = Human Potential*, 4, 1519–1523 (in Russian).
- Mayhew J., Simonoff J.S., Baumol W.J., Wiesenfeld B.M., Klein M.W. (2012). Exploring innovative entrepreneurship and its ties to higher educational experiences. *Research in Higher Education*, 53, 831–859.

- Men'shov V.P. (2005). Stages and models of innovation processes at industrial enterprises. *Vestnik Nizhegorodskogo universiteta im. N.I. Lobachevskogo. Seriya: Ekonomika i finansy=Vestnik of Lobachevsky state university of Nizhni Novgorod*, 1, 308–311 (in Russian).
- Nikulina O.V., Kozlov K.V. (2013) Current innovative development issues of enterprises in modern Russia. *Ekonomika i predprinimatel'stvo=Journal of Economy and Entrepreneurship*, 2(31), 173–178 (in Russian).
- Palkina M.V., Palkin A.Yu. (2016). Innovative entrepreneurship: Concept, essence and specifics. *Vestnik VSGUTU=The Bulletin of ESSTUM*, 1(58), 89–96 (in Russian).
- Prange C., Schlegelmilch B.B. (2016). Towards a balanced view of innovations. *Management Decision*, 54(2), 441–454. DOI:10.1108/md-05-2015-0198
- Ravšelj D., Aristovnik A. (2019). The impact of R&D accounting treatment on firm's market value: Evidence from Germany. *The Social Sciences*, 14(6), 247–254.
- Ravšelj D., Aristovnik A. (2020). The impact of public R&D subsidies and tax incentives on business R&D expenditures. *International Journal of Economics and Business Administration*, 8(1), 160–179.
- Rebyazina V.A., Kushch S.P., Krasnikov A.V., Smirnova M.M. (2011). Innovative activity of Russian companies: Results of an empirical study. *Rossiiskii zhurnal menedzhmenta= Russian Management Journal*, 3, 29–54 (in Russian).
- Rocha C.F., Quandt C.O., Deschamps F., Philbin S. (2022). R&D collaboration strategies for industry 4.0 implementation: A case study in Brazil. *Journal of Engineering and Technology Management*, 63, 101675(1-14). Available at: <https://doi.org/10.1016/j.jengtecman.2022.101675>
- Sevryukova S.V., Bychkova K.O. (2020). Analysis of innovative indicators by the development of organizations regional level. *Aktual'nye voprosy sovremennoi ekonomiki=Actual Issues of the Modern Economy*, 1, 236–241 (in Russian).
- Starodubtseva O.A., Popushina A.I. (2016). Development problems and prospects of small innovative business in Russia. *Nauchnye issledovaniya i razrabotki molodykh uchenykh*, 9-2, 240–242 (in Russian).
- Tang L., Koveos P.E. (2004). Venture entrepreneurship, innovation entrepreneurship, and economic growth. *Journal of Developmental Entrepreneurship*, 9(2), 161–171.
- Terebova S.V., Borisov V.N. (2019). The development of small innovative business in the industrial, scientific and educational sector in Russia. *Ekonomicheskie i sotsial'nye peremeny: fakty, tendentsii, prognoz=Economic and Social Changes: Facts, Trends, Forecast*, 3, 55–76. DOI: 10.15838/esc.2019.3.63.4 (in Russian).
- Trefilova I.N. (2017). Trends and issues of companies innovative activity development in Russia: From innovative business models to business ecosystems. *Izvestiya Sankt-Peterburgskogo gosudarstvennogo ekonomicheskogo universiteta*, 3 (105), 16–21 (in Russian).
- Tyutyukina E.B., Abdikeyev N.M., Obolenskaya L.V. (2017). Factors hampering innovative activity of Russian enterprises: Regional aspect. *Ekonomika i upravlenie: problemy, resheniya=Economics and Management: Problems, Solutions*, 8, 3–13 (in Russian).
- Ualzhanova A., Zakirova D., Tolymbek A., Hernandez G. de Velazco J.J., Chumacerio Hernandez A.C. (2020). Innovative-entrepreneurial universities in the post-modern world concept: Possibilities of implementation. *Entrepreneurship and Sustainability Issues*, 8(1), 194–202.
- Yanchenko E.V. (2023). Companies' innovative activity in the conditions of digitalization. *Informatizatsiya v tsifrovoy ekonomike=Informatization in the Digital Economy*, 3, 225–242. DOI: 10.18334/ide.4.3.118 (in Russian).

### **Information about the Authors**

Semen L. Ivanov – Junior Researcher, Vologda Research Center, Russian Academy of Sciences (56A, Gorky Street, Vologda, 160014, Russian Federation; e-mail: slivanov2020@mail.ru)

Svetlana V. Terebova – Doctor of Sciences (Economics), Associate Professor, Chief Researcher, Vologda Research Center, Russian Academy of Sciences (56A, Gorky Street, Vologda, 160014, Russian Federation; e-mail: svetlana-ter@mail.ru)

Received June 30, 2023.