Problems of investment and construction business in an innovative economy

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Abstract. The purpose of the current research is identification of problems that the investment and construction business faces in conditions of innovative economics. The urgent necessity to systematize these problems and find ways of their solution determined the relevance of the research. Using the methods of statistical processing of information, economic groups and logical analysis, the authors assessed innovative activity of enterprises, concluded that it was reduced, and pointed out the main problems of the investment and construction sphere. The problems include technological backwardness and low level of innovation, insufficient qualification of stuff, which is able to generate and introduce innovations in construction, and lack of attention of company management to the strategic aspects of innovation. The problem of investment and construction enterprises related to the restoration of business that suffered from pandemic is especially highlighted. These problems are closely related to the low level of investment in the innovative development of the construction business. Financing of the innovative activity is directly related to all participants of the innovative process. It is necessary to organize a clear mechanism for participants’ interaction. As a result, authors of the current research classified the participants of the innovative process in investment and construction business, determined their functions. The authors suppose that the problems of innovative financing are the most significant. In this connection, the problem of venture financing of the innovative activity is considered in more detail and solutions are offered.

1. Introduction

The modern economics of Russia has stood on new innovative way of the development. It was determined by the adopted Strategy of the innovative development of the Russian Federation for the period until 2020, in accordance with which the goals set for Russia for the long-term development require the formation of a leadership and innovation economics. Nowadays, it is the implementation of the innovative processes on all levels forms the basis of country’s economic development [1], it is confirmed with plenty scientific publications.

A huge role in achieving strategic goals is played by the innovative development of such a sphere of economic activity as construction. At the present time, the investment and construction business faces the range of different systemic problems and modern scientists try to find the solutions. In this connection, one of the main tasks is the intensification of innovation, the main areas of which are defined in [2]. Factors that impede the development of innovative activities in this film [3, 4] are
widely discussing in the scientific sphere. Various options of the development of regional investment and construction complex (ICC) are offered [5, 6], close attention is paid to structural transformation in them [7] and quality improvement at all stages of the investment and construction processes [8, 9]. An important place in providing sustainable development of (ICC) is given to controlling [10] and increasing various types of responsibility [11] in the implementation of the investment and construction business. This type of business is highly costly process for all types of resources as a result of which many different disputes arise that require resolution, both in court and using non-judicial methods [12]. The review of publications conducted by the authors allows to conclude that the investment and construction business in conditions of the innovative economics has lots of problems. However, there is no complex solution to them to date. It confirms the relevance and practical significance of the topic and goal of the current research.

2. Materials and research methods

Authors’ research of innovative activity of Russian organizations, including construction sphere, in period from 2011 to 2019 allows to conclude that for the first 6 years the proportion of enterprise engaged in innovative activities is reduced from 10,4% (2011) to 8,4% (2016). Over the next years, there is a very slight increase: 0, 1% in 2017, which in relation to the previous period reaches 8,5%. There is no information available about 2018 in the official statistic source «Russia in numbers». However, we might suppose that approaching global crisis caused by the pandemic 2019-2020 will aggravate the current situation. Namely, the innovative activity in the investment and construction business will be reduced; number and severity of the sphere’s problems will increase. Therefore, today it is necessary to take measures to solve the current problematic issues and consider benefits of planning the building activity [13,14], making on this basis an ability to grow innovative potential of ICC enterprises [15,16]. It will support the development of regional economic of our country; also, it is appropriate to solve regional problems according to the system of cost-benefit analysis, recommendations for which are presented in [17].

The research conducted by the authors has revealed a number of problems, which are specific to the investment and construction business in terms of innovative economics:

1) A restoration of the business to the previous level (2019) in the near future. Now it is a priority issue and without state participation, the adaptation period may significantly increase;
2) Unsatisfactory level of enterprises’ resource provision: lack of financial resources for providing innovative activity and qualified stuff, which involved in development, promotion and implementation of the innovations;
3) Unsatisfactory working conditions for the implementation of the innovative activity (significant resource costs, high taxes load, imperfection of the regulatory framework in the innovative field, low personal interest and the lack of an effective stimulating system of stuff to innovative activity);
4) Limited financial capabilities of construction products’ consumers demands for the results of innovative activities of the enterprises;
5) Lack of interest from the most ICC enterprises in implementation of innovative activity;
6) Lack of strategic programs for the innovative development at the enterprises.

3. Results

The result of the conducted research is the list of detected problems in within the chosen topic and developed recommendations for their solution. In the investment and construction sphere, the problem of the innovative activity’s financing is very serious. Its solution depends on clean interaction of all participants of the innovative processes in building production. As part of solving this problem, the authors have classified participants of the innovative process in the investment and construction business. First of all, there are construction organizations that form demand on building innovations.
The most important participants are innovation manufacturers that form offer on the building innovations. Scientific and educational organizations, research institutes (RI) and so on are belong to them. One of the participants is the state that regulates the shown processes. It has a special role. The state is a source of demand on the innovations and also an intermediary in the innovation processes. For providing an interaction between demand and offer, there is a necessity in functioning of lots of intermediaries. Table 1 presents structure of participants of the innovative process in the investment and construction business.

Commenting this table, we may notice quite a massive structure and interaction between participants of the innovative process in the investment and construction business. There may be two options of the interaction: free (no permanent connection, everything is solved by situation and contractual activity) and cluster (stable economical, production, innovative, organizational and management connections between participants of the cluster system taking into account their territory localization).

**Table 1** Structure of participants of the innovative process in the investment and construction business.

| Participants | Subjects | Functions within the innovative process |
|--------------|----------|----------------------------------------|
| Construction organizations | General contractors | Consolidation of technological innovations’ proposals |
| | Construction and installation organizations (subcontractors) | Technology innovation carriers |
| | Project organizations | Integrate an innovative product or technology into a construction project |
| Manufacturers of innovations | Educational organizations | Sources of innovative ideas, training of stuff providing innovations’ implementation |
| | Scientific organizations | Sources of innovative ideas, intellectual property developers |
| | Research institutes (RI) | Sources of innovative ideas, intellectual property developers |
| State | Federal executive bodies | Regulation of all processes taken place in the innovative sphere |
| | State authorities of the regions | |
| | Local government | |
| Intermediaries | Investors, including venture capital funds | Financing of development of new construction products and technologies |
| | Techno parks | Enabling construction organizations to use their potential for R&D and innovations |
| | Business incubators | Providing organizational services for small innovative enterprises |
| | Educational centers | Training stuff in field of innovative activity |
| | Innovative centers and scientific parks | Providing opportunities for scientific research and experimentation |
| | Community centers | Providing the possibility of pilot small-scale production of construction products |
| | Technology innovation zones | |
| | Centers of intellectual property and copyright, etc. | Providing information about innovations in construction, etc. |

Solution of the innovative development problem of the investment and construction business is impossible without cluster implementation of the building processes at regional level. The cluster type of interaction in this case involves complex approach in which efforts of various organizations aimed to the general goal – innovative development of the investment and construction business in the region. A willpower, knowledge and hard work of leaders’ team interested in the innovative development of the construction complex of each region is necessary to activate an innovative activity in the investment and construction business. In our opinion, the state authorities of the region involved in construction process (for example, the Ministry of Construction or Road Facilities of the Irkutsk region) should be an initiator of creation of such a team. This team should include representatives of
the business community, universities, authorities and innovative infrastructure. At the first stage, team should determine the composition of the regional construction cluster’s participants and get their support. Afterwards, this team should become an authority which will coordinate activity of all cluster’s participants in sphere of the innovative development of the investment and construction business in the region. Activity of the region in the field of the innovative process development should include measures shown at the scheme (figure 1). These measures should be issued as a roadmap approved by order of the regional government.

The innovation activity’s analysis specified in first event allows revealing already existing regional initiatives and monitoring the innovative construction products and technologies.

In second event, we talk about the following standards, developed with the participation of the Russian Venture Company (RVC), the Agency of Strategic Initiatives (ASI), the Fund for the Promotion of Innovations (FPI):
- Regional standard NTI (National Technology Initiative);
- Regional standard of stuff providing;
- Regional standard of investment climate.

Implementation of shown standards will support growth of the regional innovative activity.

![Figure 1. Regional measures in field of innovative process development.](image)

In third event, formation of the innovative project’s streams is declared. It is a difficult task requiring attraction of such a special instruments as contests, support measures, developed infrastructure, cooperation with federal organizations (RVC, ASI, FPI, etc.) and federal project contests. Stimulation of demand on the projects is connected with regional policy in field of the innovative initiatives’ support; development of the regional infrastructure of the innovative activity support; launching of pilot project factory in region, etc.

Special attention should be paid on financial and non-financial support of the innovative process in the investment and construction business of the region (event 4). Currently, a number of federal development institutions offer financial support of the innovative projects (RVC, ASI, FPI, etc.). Regional authorities should cooperate with these institutions. However, it is necessary to create own regional instruments of financial support. For large and medium enterprises, it may be contests, grants, subsidies and venture financing. Small enterprises, startups and innovative projects should be financed on early stage of the project. For these purposes, it is advisable to draw business angels, accelerators and venture funds. Non-financing support is connected with development of the regional innovative infrastructure.

Regional innovation infrastructure is an important element in the development of individual regions of the country in an innovative economy. The authorities should pay special attention to its development. It is also necessary to understand what the regional innovation infrastructure includes.

It consists of regional organizational structures whose main tasks in the investment and construction sector include:
creating conditions for the sustainable development of innovative enterprises operating as part of regional investment and construction complexes and organizing fruitful cooperation between them;
creating conditions for the rational use of resources directed to the development of innovative activities in the region;
providing conditions for regional innovation structures to implement innovative projects relevant to the region in the investment and construction sector;
ensuring the integration of science and production in order to develop advanced building materials and technologies;
provision of services for resource (material, technical, personnel), financial, informational, organizational and other support of innovation activities in the region;
monitoring the development of innovative infrastructure.

Monitoring plays an important role in the successful development of regional innovation infrastructure. To improve the effectiveness of regular monitoring, it is necessary to clearly systematize the elements of regional innovation infrastructure.

Special attention should be paid to the classification of elements of regional innovation infrastructure according to the criterion of sources of financing for the creation of innovative infrastructure facilities and for financing their current activities. In this regard, the following methods of financing can be identified:

- at the expense of the state;
- private financing;
- public-private partnership.

The authorities should facilitate the selection of the optimal option for financing innovation activities. In addition, it is necessary to systematize the elements of the innovation infrastructure according to their belonging to the stage of the innovation cycle. Traditionally, the following stages are highlighted:

- stage of research work;
- stage of development work;
- experimental production stage;
- production stage;
- stage of promotion of an innovative product.

All these stages of the innovation cycle are also present in construction innovation processes. At the stage of research and development, the role of the state in the development of innovation activities, including in the investment and construction sector, is increasing. It is at this stage that the scale of investment projects being developed and the depth of consideration of regional problems being solved are determined.

Searching for talents may be one of the generators of innovative products’ ideas or technologies in the investment and construction business. Therefore, it is necessary to develop system of selection, monitoring and maintenance of the talents (event 5). Creation of innovative societies, conducting contests between the best youth projects, creation of children techno parks may become the instruments of this system.

Cluster unification of innovation process participants in the investment and construction business in region will contribute an effective cooperative activity in field of development, introduction and commercialization of the innovative construction products and technologies.
Summarizing the information, the authors has presented a model of venture financing of innovations in the investment and construction business (figure 2).

1. Searching for innovative construction products and technologies (new ideas)

2. Designing the stages of an innovative project’s life circle:
   - Sowing stage (1)
   - Start-up (2)
   - Early stage (3)
   - Extension (4)

3. Selection of venture investors by stages of the life circle
   - (1) Grants, own resources, business angels
   - (2) Grants, business angels, business incubators
   - (3) Venture funds
   - (4) Venture funds

4. An analysis of business projects and a preparation level of entrepreneurs by venture investors. Financing decision-making

5. Entering of venture investors into project

6. Financing of project by stages of the life circle

7. Venture investors exit from companies

**Figure 2.** Stage-by-stage model of venture financing of innovations in investment and construction business.

This model allows to identify step-by-step actions of participants of the investment and construction business for searching and promotion of innovations, which are financing by venture funds.

The venture financing is possible in the construction business only if there are fundamentally new ideas that can be turned into an innovative project of new product or technology creation. This financing is highly risky because of addition scientific risks to common risks. Venture investors are selected according to stages of the project life circle. They give an opportunity to develop an idea from early stages of the project. Before making decision about financing, venture investors analyze projects and preparedness of entrepreneur for their implementation. Venture investors enter the project by acquiring a stake in the company. They exit from companies by selling these shares after a certain period for a price that significantly exceeds the initial investment.

**4. Discussion**

Shown problems are debatable for a number of reasons. The interest of modern scientists is raised by questions regarding the determination of the significance of factors contributing or hindering the introduction of innovations into activity of ICC enterprises [3, 4]. One of these factors is the investment territory climate where enterprises engaged in innovative activities operate. Discussing of methodological foundation of the investment climate assessment for providing its auspiciousness is important [18], because the issue of innovative financing is especially relevant [19, 20].

The issue of defining the essence of the concept of “innovative infrastructure” and the elements that make up it remains debatable. Some authors identify elements based on the external environment (transport, intermediaries, regulatory and legislative acts, innovators, etc.), while others note two components: organizational and technological (business incubators, technology parks, venture funds)
and service and resource (banks for reconstruction and development, patent and law offices, various centers (educational and business, scientific and technical information, collective use and others)).

Investment and construction activities in certain territories are carried out by regional investment and construction complexes. The composition of these complexes is also a debatable issue. Most authors include the following links in the regional investment and construction complex: investment, research and design, industrial and construction. However, this composition of the ICC does not take into account the innovative component. In this regard, the regional investment and construction complex should include such links as: investment, industrial and technological, construction and scientific and innovative. This will allow us to more successfully solve the problems of investment and construction business in the innovative economy.

5. Conclusion
The authors have conducted a review of publications in the chosen research area and the conclusions obtained as a result of an analysis of the innovative activity of the modern Russian enterprises. This review has revealed a number of problems that are specific for the investment and construction business in conditions of innovative economics. All revealed problems are closely connected between themselves, and there is a necessity of their complex solution in conditions of modern housekeeping. There are 3 key problems:

- The first and primary problem of the investment and construction business in next year or two will be a decline in production due to the crisis, caused by the pandemic, and deterioration of financial conditions of enterprises of the investment and construction complex. In current situation, the main task is the development of business restoration programs;
- The second revealed problem is connected with limited resources in considered field of activity, namely: lack of free working capital that can be forced to development and introduction of innovations into the construction sphere. It is a restraining factor in the innovative activity. The authors have proposed a stage-by-stage model of innovation financing by venture funds to solve the current problem. Its possibility for practical use is confirmed by example of the investment and construction business of the Irkutsk region;
- The third problem is connected with unfavorable external factors that negatively affect on the innovative activity in construction. Solution of this problem is possible due to the implementation of developed by the authors regional measures for development of the innovative activity in certain regions of the country.

There is a necessity in solution of all listed problems for complex development of the investment and construction business. However, at the present time, the problems from number 4 to number 6 have a lack of attention. Due to this, the authors are planning to continue researches in field of strategic aspects of the innovative development of the construction enterprises as well as forming of effective systems of enterprises interest in implementation of the innovative activity.

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