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IMPROVEMENT OF INNOVATION ORGANIZATIONAL AND ECONOMIC MECHANISM IN CONSTRUCTION

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Abstract

In this study, an organizational and economic mechanism that will enable the higher actual innovation activity in the construction sector, based on domestic and foreign experience in the development, implementation and diffusion of innovations is offered. The relevance of the research is that, nowadays, a key factor of success and higher competitiveness in the market are the conditions of innovation and investment activity of construction enterprises function. The organizational and economic mechanism proposed in the article includes all the main stages of the innovation process and involves participants of different levels. The result of the process is implemented and applied change, innovation. Each innovation implemented in construction is unique, but there are common methodological approaches to their development and implementation. The main stages of the innovation process of the mechanism proposed are given sequentially and include an idea genesis, development of a scheme of transformation of the idea into an innovation, efficiency forecasting and resource evaluation. The legislative developments of innovative projects financing techniques as well as their practical application are of important role. The proposed model can be considered as universal one making it possible to increase productivity, economic efficiency of various construction industry enterprises, improve the quality of construction products and maintain the enterprises competitiveness corresponding to the level of the Russian economic system and that of the global economy. The research methodology is based on the Russian and foreign studies in the field of innovation and construction organization.

Keywords: Innovation, investment in innovation, innovation in construction, implementation, innovation process, innovation efficiency.

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1. Introduction

Scientific and technological progress, globalization and internationalization of the market have been developing more rapidly nowadays (Timchuk et al., 2018). In such circumstances, it is difficult to maintain a competitive advantage for a long time. Construction as one of the most important sectors of the regional and national economy has peculiar features that distinguish it and they influence on the innovation and investment processes of the enterprises involved. Science and technology development leads to changing and improving of the construction process also. Favorable conditions for attracting additional investment in this industry and increasing innovation proportion in related processes (Curzio et al., 2012) are paid more attention to.

The key problems of economic growth and higher social enterprises responsibility of the construction branch are solved on basis of scientific and technological potential, developing and implementation of long-term plans and innovative development programs. In this regard, managing the structural elements of innovation, which comprise innovation infrastructure of enterprises, assumes more important role. Organizational and economic mechanism of innovation in construction and correct strategy of organization's infrastructure innovative development ensures not only rational use of the potential of company's divisions, but also appropriate interaction between the companies and scientific, educational and innovative organizations (Sergeeva & Trifilova, 2018).

2. Problem Statement

The construction sector in Russia is conservative in regard with implementation and wide spread of innovative technologies, and among the innovative and active sectors of the leading economic powers, construction doesn't rank first, but, unfortunately, among the last. At the same time, the development and implementation of innovations in construction sector is one of the actively developing areas of scientific and technological activities. Promoting the construction enterprises innovative activity is a key task to be solved. These factors underlie the development of organizational and economic mechanism of innovations implementation in construction.

3. Research Questions

The following problems are considered thoroughly to achieve the goals: essence and peculiarities of innovation implementation (Tsvetkov, 2012a, 2012b); peculiarities of innovation complex model in construction (Arefian, 2018; Ozorhon & Oral, 2017); peculiarities of the main innovation stages (Bettencourt, 2010; Rogers, 2010); approaches and principles applied to construction innovations (Griffin et al., 2019; Zhang et al., 2019); peculiarities innovation effectiveness evaluation in construction (Liu et al., 2017; Papadonikolaki, 2018; Sergeeva & Roehrich, 2018).

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4. Purpose of the Study

The purpose of the research is to improve the organizational and economic mechanism of innovation in construction, as one of the grounds for higher efficiency of construction industry and the economic system of the Russian Federation as a whole.

5. Research Methods

Research methods included general logical ones-analysis, generalization, analogy and abstraction; empirical ones – observation, description, and comparison; theoretical ones – idealization and formalization as well as systematization of scientific knowledge – typology and classification in relation to the theory and practice of organizational and technological models.

6. Findings

Taking into account the essence of innovation and innovation process, modern features of the transition to the sixth technological order, foreign and Russian experience in the organizational and economic mechanism of innovation implementation, as well as theoretical aspects of innovation, the following organizational and economic mechanism of innovative construction technologies is proposed (Figure 01) (Gorbachevskaya et al., 2019).

The main effectiveness criterion of this mechanism is a systematic approach, which enables to implement innovations with a systematic approach, and comply with the integrity principle in all innovation process stages.

Public authorities are assigned the main role at Stage 1. They are to provide effective interaction system between domestic construction enterprises and research organizations carrying out innovations. A common space that ensure an open information framework to identify the need for innovative developments and search for organizations that can develop this innovation should be provided.

A kind of information field can be seen when considering the experience of the US innovation activities development, where Contract Centers determine the need for innovations, build a research team from scientists, employed by various organizations, in accordance with the innovation specifics, evaluate the need for other resources and closely interact with government authorities, one of the participants and investors of the innovation process.

The diminution of administrative impediments to the implementation of innovative projects is also important at the Stage 1 of the innovation project. Small businesses involvement in innovation projects is of particular importance as their main task is in rapid testing and evaluation actual innovation effectiveness.

Venture financing, factoring and franchising are the most effective mechanisms of attracting investments for the implementation of innovation projects initiated by both research organizations and commercial enterprises of the construction industry.

Stage 2 includes transformation of the innovative idea which is formed as a result of real Russian economy sector needs and a particular innovative project mechanism. For this purpose, the scientific

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body/foundation, which controls all the main resources necessary for innovative projects organization, build an innovative project team, forms a resource base and monitors the innovation development.

Stage 3 implements the innovation developed into the practice of the construction enterprise. It should be noted that small businesses are more mobile compared to large enterprises, so it is easier for them to implement changes into their production processes.

That is, the innovation implementation period requires less time, as well as changes in the production process in case the innovative development is not effective will also be less painful for the enterprise. In turn, small construction businesses with of limited financial resources get access to the latest achievements of science and technology.

At the stage 4, the return on investment occurs as a result of innovation mass distribution at large and medium-sized enterprises of the construction industry. Figure 1 shows the direct return on investment, which includes the purchase of innovative development from the owner – the scientific fund, and the return on investment to scientific funds – public authorities. Indirect return on investment is carried out by increasing tax revenues to public authorities from enterprises due to their increased incomes.

At this stage it is also important to monitor the effectiveness of innovative development with the scale effect taken into account. Construction innovations occupy a special place in the general classification, because they cause positive synergistic effects not only at the stages of a life cycle of a building or structure, but also in many related industries.

When evaluating the principles of innovations effectiveness in construction the systematic approach, which considers the innovation process as a complex system with a long life cycle and includes a set of interrelated processes and elements, is essential.

The development of the systematic principle in management and evaluation of innovations effectiveness leads to synergy effect to be taken into account. The manifestation of the innovation synergy effect can be in three main directions when investment and construction project is carried out: increased expected revenue, lower operating costs and combined impact from increased efficiency across multiple business areas.

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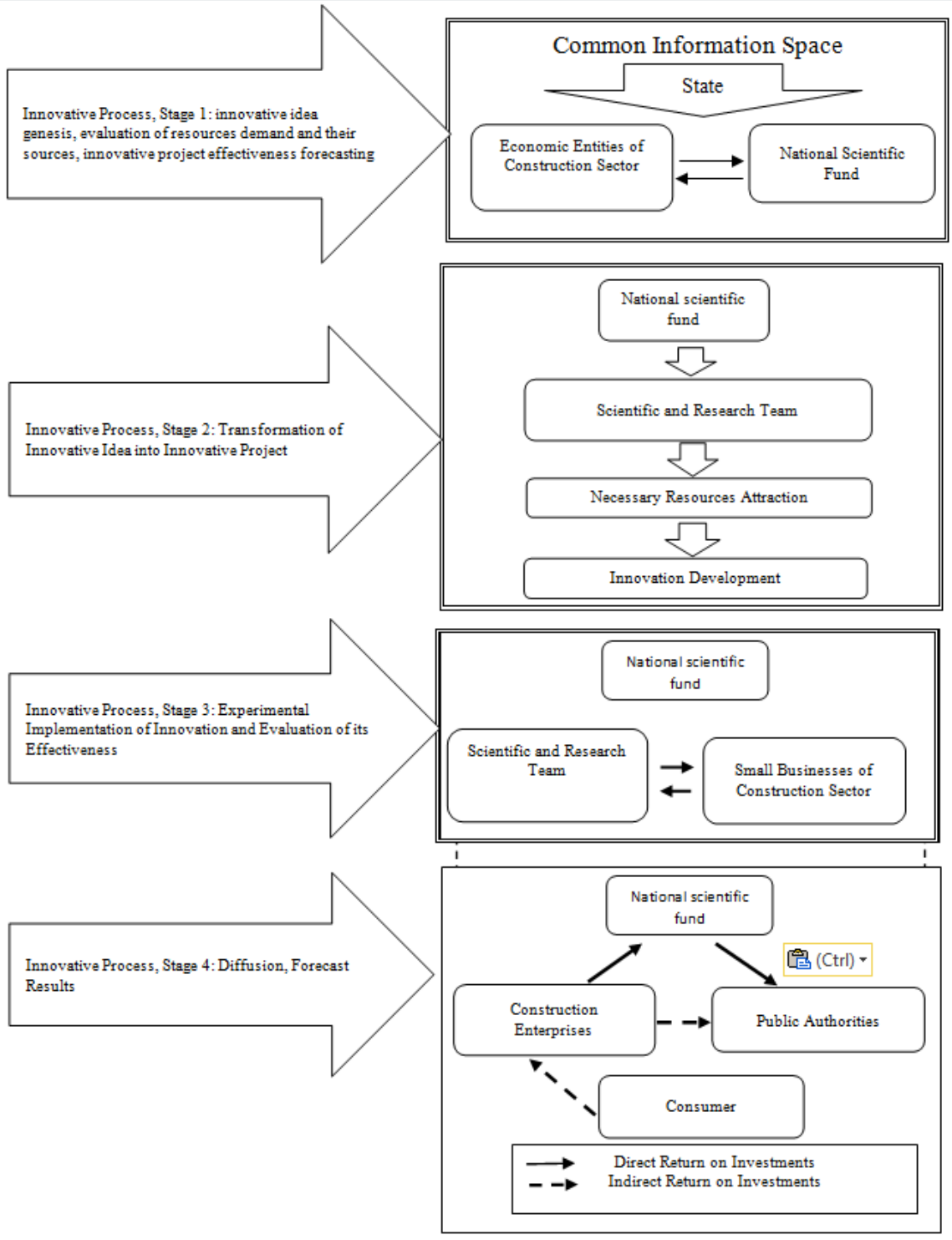

Figure 01. Organizational and economic mechanism of innovation in construction

7. Conclusion

The implementation of the innovation process is based on innovation strategy, which is developed by commercial enterprises (consumers of innovations) and the scientific foundation (the initiator and body implementing the innovation process).

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When a system of enterprise innovative development is effective, the enterprise is able to work in a competitive environment with the greatest economic efficiency. When a strategy aimed at improved competitiveness of the organization and/or its products developed, there occurs determination and search of the sources necessary for competitive advantages of the subject which are attractive to the consumer.

Enterprise innovative strategies are developed and correlated with the existing types of enterprise strategies which enable improved competitive advantages of the subject. Innovation strategies can be classified according to their orientation, methods of implementation and innovation activity rates.

Thus, the organizational and economic mechanism covers the full cycle of the innovation process, takes into account the principles of consistency and integrity, and defines functions and tasks of each participant. Such an integrated approach makes possible to plan the process of innovation in the most effective way thanks to common information space, functioning of which is assigned to the state authorities.

The prospects for further problem development include possible improvement of the theoretical and methodological provisions proposed by the authors and the existing practical tools which are employed by the authorities when they promote construction enterprises innovative activity and applied by commercial entities for higher operations effectiveness.

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