

FEATURES OF INNOVATION-INVESTMENT ACTIVITIES IN CONSTRUCTION INDUSTRY

© 2010 V.A. Koshelev*

Keywords: innovation, housing, innovation risks, risk management, innovation and investment activities.

The article reveals some features of innovation and investment activity in construction industry. The reasons for low innovation activity in construction industry in Russia are considered. Various approaches to the classification of innovation in the construction are being examined in the article.

To study innovation in construction industry we need to pay special attention to the peculiarities of industry innovation, and their task orientation, which takes into account the requirements of market economy.

One of the characteristics not only of Russian, but also the global construction industry is its conservatism in relation to the introduction and wide dissemination of new technologies. Construction industry in the ranking of innovation-active sectors of the leading economic powers is one of the last places. As the main argument, confirming the validity of this characteristic, many studies have found a link to a very low proportion of R&D component in the overall cost of construction companies.

It is necessary to make a significant corrective amendment to the fact that a significant proportion of new technological developments introduced in the construction, come back from other industrial sectors (metallurgy, forestry and wood industry, chemical industry, etc.).

Methodology for systematic description of innovation in a market economy based on international standards, recommendations adopted in Oslo in 1992 and were called "Oslo Manual". They are designed in relation to technological innovation and embrace new products and processes, as well as their significant technological change.

The complex nature of innovation, their versatility and variety of areas and ways to use different approaches to determine their classification. In relation to the construction industry, it is advisable to consider the following approaches. Thus, innovations that differ in the directions of use, include:

◆ technical, which usually appear in the manufacture of products with new or improved properties;

◆ technological, which arise when applying the improved, more sophisticated methods of construction;

◆ organizational and managerial, which are primarily associated with the processes of building the optimal organization of production, transport, distribution and supply;

◆ informational, that solve the problem of rational organization of information flows in science, technology and innovation, improve the reliability and timeliness of information;

◆ social, aimed at improving working conditions, the problems of education, etc.

With regard to the construction industry, in our opinion, are the following innovations:

◆ introduction of new efficient building technology (construction of the experimental houses in view of modern architectural and planning solutions, heat requirements using modern autonomous systems engineering arrangement, organization and improvement of production technology and effective wall insulation materials, construction, reconstruction and technical re-equipment of enterprises of the construction industry with software commissioning of the facilities for building products, materials, designs, engineering infrastructure homes);

◆ the use of new types of construction machinery and equipment (implementation of high-vibropress equipment, the production of highly basic types of construction machinery, construction of new designs and lots of machinery and equipment), with higher productivity, profitability and allow to reduce the construction period and the proportion of operational costs of machinery and mechanisms;

◆ the use of new building materials, including - finishing (eg, insulation of walls), with enhanced performance and consumer characteristics - heat-saving, soundproofing, etc.;

* Vladimir A. Koshelev, post-graduate student of Samara State University of Economics. E-mail: nauka@sseu.ru.

- ◆ introduction of new architectural and planning decisions (the selection of projects passports homes to meet new requirements for heat engineering and adjustment of previously issued catalogs of houses, etc.);

- ◆ new forms of organization of construction process.

According to some scientists, innovative activity - an activity aimed at the use and commercialization of research and development to expand and upgrade the range and improve the quality of products (goods and services) to improve their production technology, followed by the introduction and effective implementation in domestic and foreign markets.

Innovative activity in construction, in our view, the activities associated with the transformation of scientific and technical activities in new or improved products and involves a range of scientific, technological, organizational, financial and commercial activities in its totality leads to innovation.

Species essential innovation for construction companies may be:

1. Preparation and organization of production. Encompasses the processes purchase of equipment and tools, making changes to them, procedures, methods and standards for production, quality control, and creating a new process.

2. Pre-production development. Contains processes modification of the product, process, restaff to implement new technologies and equipment, as well as steps trial production, with further elaboration of the structure.

3. Marketing of new products. Preliminary market research adapt the product to different markets, advertising company.

4. Acquisition of technologies. Acquisition ready to patents, licenses, trade marks, models and services technological content.

5. The purchase of new machinery, equipment, technology for content related to the introduction of product or process innovations.

6. Production Design. Preparation of plans, calculations and drawings to create new technologies, specifications, calculation of performance.

Innovative activities related to capital investments in innovation, called by some authors of innovative investment. Participants in the innovative - investment activities of the construction sector, in our view, could include:

- ◆ investors, who act as creditors, customers, buyers, etc.;

- ◆ designers;

- ◆ producers of material and technical (technological) resources;

- ◆ construction organizations that are transforming the investment funds in fixed assets. Construction organizations (or on their behalf - the manager, the manager) are joining the activity of investors, customers, designers, suppliers of material and technical resources;

- ◆ innovative organization that develops research and technical innovations with a view to their subsequent use in the creation of capital;

- ◆ institutional market structures for treatment of investments in fixed assets (financial resources) on the productive and marketable stages of their turnover;

- ◆ logistics companies, providing content distribution network and bringing goods and services to economic entities of investment and construction activities;

- ◆ subjects of innovation infrastructure (technology parks, business incubators, innovation and investment funds, etc.).

One of the objectives of innovation and investment activity for construction companies is the maintenance and development of innovative capacity of the enterprise.

Under the innovative potential of a construction company may assume the existence of a specific set of capabilities, both in terms of resources, as well as opportunities to attract them to maintain (create) the necessary competitive advantages of building products by introducing new production processes, technologies and products.

The principle of maintaining innovative capacity building enterprise is considered from the standpoint of whether R&D units of construction companies to generate and implement scientific and technical ideas, which, after detailed study will turn into an investment - attractive projects of innovation.

In the United States commissioned by the National Association of house builders (NAHB) and several other organizations have repeatedly carried out comprehensive studies of basic institutional and market barriers to widespread implementation of technological innovations in construction (especially in the residential housing construction). The following is a list of inte-

grated innovation barriers in the U.S. housing construction, identified in several similar studies:

- ◆ cyclical nature of construction;
- ◆ preponderance of small firms;
- ◆ low level of integration in the industry, excessive dependence on subcontractors;
- ◆ variety of construction standards and specifications, an abundance of regional characteristics, both in technical and legal aspects;
- ◆ lack of a unified system of testing and certification of new products;
- ◆ lack of free access to information about new products;
- ◆ inadequate (average) level of technical expertise and training in the industry;
- ◆ need the approval of innovation finance and insurance sectors;
- ◆ limited funding for research in innovation;
- ◆ resistance to innovation on the part of buyers;
- ◆ lack of established schemes for promoting new technologies from research laboratories for testing under operational conditions;
- ◆ weak contacts between university research centers and the construction industry;
- ◆ low level of state support for technology development;
- ◆ high cost of commissioning facilities;
- ◆ low correlation between technological innovation and profitability.

A number of the above factors, in our opinion, the most pronounced for innovation and investment activity in the housing sector in Russia. Moreover, innovations in housing construction industry is usually implemented with a noticeable lag compared to the commercial and

industrial segments of the industry, and there are cases where innovation is successfully tested last, and did not receive wide distribution in residential construction.

Increased use of innovative technologies in the construction and use of new building materials in the implementation of housing constrains several factors, among which the most important for construction companies is the lack of free investment resources for R&D on their own, as well as to purchase equipment for testing and research of new building materials. Also, in company with some caution related to the choice of new materials or methods of construction in connection with the high responsibility for the outcome of their application in the construction of residential houses.

One of the major problems of construction companies, which aggravated the crisis - too large periods of construction and commissioning. For a long time building the company worked, not paying much attention to costs, without the use of technologies that accelerate the production. One of the ways of solving this problem is the application of innovative technologies in the construction.

Atoyán V. Innovative activity in strategic planning: a lecture synopsis. Saratov, 1996.

Asaul A. Theory and methodology of institutional interaction between the subjects of investment and construction complex. M., 2006.

Innovations in the Construction Cluster: barriers and prospects. Report of the Office of Innovation "Expert". M., 2007.

Plotnikov A. Investment mechanism in innovation. Saratov, 2003.

Received for publication on 21.10.2010