INNOVATION MANAGEMENT AS A FIRM-LEVEL STRATEGY FOR INNOVATION DIFFUSION IN CONSTRUCTION INDUSTRY

Upravljanje inovacijama kao strategija preduzeća u širenju inovacija u građevinskoj industriji

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Abstract

Nowadays, conscious management of innovation in construction firms is becoming increasingly necessary. The research investigates the role of innovation management as an element of firm-level strategies of innovation diffusion. As a part of larger study of Russia's construction industry, a survey was conducted and data was collected via mailed questionnaires. The questionnaire requested respondents to provide specific data about the type of innovations adopted, the barriers to innovation diffusion and strategies to innovation promotion. The main objective of the paper is to find which management methods and practices are used by construction companies to become innovative.

Ključne reči: Innovation management, Construction industry, Russian Federation

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1. Introduction

Many studies have been undertaken to examine enablers and obstacles to innovation in the construction industry. However, a consistent understanding of innovation management in construction firms is still missing, especially in the context of the Russian Federation.

Improving the system of innovation management is one of the firm-level strategies for the development of innovation implementation. As repeatedly noted, Russian and foreign experts (Hartmann, 2006; Sayfullina, 2010), poor quality of internal management has been hindering the companies’ development for many years, as well as the introduction of modern management approaches of business activities and the transition to advanced development strategies. At the same time “improving of management and business innovation were considered as a source of economic growth of enterprises in case of low investment and weak technological progress” [Gokhberg et al. 2010, p.21]. It was more noticeable after the economic crisis in 1998. According to the official statistics, few construction companies are using the newest management technologies in Russia. At the same time, most of the firms continue to use the simplest methods of internal management [Gokhberg et al. 2012].

The main objective of the paper as a part of larger research devoted to the study of barriers and strategies for construction innovation diffusion is creating a source of empirical data for analyzing the innovation behavior of construction firms in Russia. It focuses on managerial problems of modernization. In particular, the following analytical capabilities can be used in context of creation of complex of relevant measures for innovation diffusion:

- analysis of managerial innovation (new approaches of HR management);
- new methods related with knowledge management and employee remuneration;
- use of IT, etc.

After the introduction, the literature is briefly reviewed. This is followed by a description of the research methodology and presentation of the survey results and discussion. Finally, conclusions are presented.

2. Literature review

The construction industry is the most conservative and inert field of real sector of economy. This statement is reflected in various studies [Gann 2000; Blayse 200, Sayfullina 2010]. To develop the process of innovation implementation, it is necessary to improve innovation diffusion strategies.

Many studies have been undertaken to examine innovation [Bossink 2004; Blayse & Manley 2004; Zavlin et al. 2006].

Innovation is the productive use of knowledge manifested in the successful development and introduction of new processes, products and/or services [Dodgson et al. 2002]. Innovation is the introduction of new goods, new methods of production, the opening of new markets, the conquest of new sources of supply and the carrying out of a new organization in any industry [Schumpeter 1934, p.112]. These definitions are more general and economic.

Construction is a very diverse sector and there is not one single way in which innovation occurs. Construction is partly manufacturing and partly services industry [Bossink 2004]. Innovation may result from the everyday problem-solving carried out
by construction professionals [Groak & Krimgold 1989] – or through development processes and formal research [Freeman 1974; Gann 2000].

In this paper, an innovation is defined as a new idea that is implemented in a construction project with the intention of additional benefits although there might have been associated and risks. The new idea may refer to new technology, component, design, material or construction method deployed in a project.

This study focuses on the innovation process in particular management actions that may bring more benefits to construction projects. The construction industry has been dominated by structural changes in recent years. The strategic importance of innovation is increasing within this process, hence why many firms are confronting the need to make crucial strategic decisions [Sexton & Barrett 2003]. Slowly but surely, construction firms are recognising the importance of more conscious innovation management [Gann 2000; Ling 2003].

The innovation management comprises all activities which aim at effective implementation of new ideas into efficient market solutions [Drejer 2002] and the reinforcement and capitalisation of the willingness and capability of an organisation to innovate [Rogers 2003].

The strategy section of the questionnaire covered public policy, technology strategies and business (management) strategies such as human resource and marketing strategies, that are highlighted in the literature as key innovation drivers. Black and Lynch (2004) point out the role played by employees in promoting innovation, as well as the role of marketing strategies in driving innovation see Kumar (2004) and Zavlin et al. (2006).

According to some studies [Gokhberg et al. 2010; Zavlin et al. 2006] the most used instruments of modern strategic management for innovation development are:
- measures to disseminate the ideas about firm strategic prospects among staff;
- customer focused system for determining the characteristics of future products;
- encouragement of personal development and training of staff;
- technological audit;
- use of naval concepts and techniques of innovation management;
- use of reward mechanisms and encourage system for authors of successful innovation;
- etc.

3. Research methodology

This paper presents part of the findings of a larger research project that investigated the barriers to innovation diffusion in the construction industry of the Russian Federation. The research methods aimed to identifying the major strategies that assist innovation implementation. To achieve this, a questionnaire was designed. The questionnaire requested respondents to provide certain information about the range of instruments used in innovation management and methods of intellectual property protection. The definitions of an innovation and innovation management, as given in the literature review section, were provided in the questionnaire. In the survey, 48 experts in construction innovation were interviewed. The questionnaires were sent by e-mail. The contact person on the list was the business owner, top-manager or project manager. The experts represented various institutions and firms in the Russian construction industry.
4. Results and discussion

Respondents were asked to rate strategies for successful innovation diffusion that could be implemented by the government or the construction itself in order to foster innovation. Figure 1 shows how respondents rated the strategies on a five-point scale according to the importance of the strategies to the success of their business.

The most popular measure (rated at 5 points by 52% of respondents) is “Tax incentives (tax benefits for R&D activity etc.)”. It is closely followed by “Transition to new standards supporting the implementation of advanced innovation products and technologies”, “Introducing new technologies” and “Actively encouraging employees to seek out improvements”. Looking at average scores government strategies are ranked first, technological strategies are ranked second and business strategies are ranked third. It is significantly important for Russian companies to develop business processes and pay more attention to management practices.

Figure – 1. Strategies for innovation diffusion
(share of respondents awarding a rating of 4 or 5 points)

Source: Author’s calculation

In the survey, it was decided to estimate the prevalence of modern management instruments in detail. Companies are aware of the entire spectrum of strategic methods of innovation management, but most of the time (37-52% of respondents) they use four of them (Figure – 2):
1) customer focused system for determining the characteristics of future products;
2) encourage of personal development and training of staff;
3) included the innovation process in the firm strategy;
4) use of reward mechanisms and encourage system for authors of successful innovation.

This is indirect evidence of low quality of management overall. Almost 13% of innovative firms do not use special techniques (methods) for innovation management. This is consistent with the findings obtained in the analysis of firm-level strategies.

Many of the respondents - 22-28% (in each case) — note that their system of innovation management includes: work with the "early adopters" (customers using new technologies and products); ways to disseminate the ideas about strategic prospects among workers, that helps to increase the staff responsibility for business development; monitoring and evaluation of effectiveness of innovative projects; introduction of technological regulations, stimulating the resource-saving; cooperation with leading research centers and universities.

**Figure 2. Modern methods on innovation management**

(share of respondents choosing the option)

Turning to the characteristics of modern management practices application of the innovative firms, it is necessary to allocate a few moments. They have begun to actualize the effective scheme of production process, knowledge and human capital management. However, as in other cases, the most simple and long proven world management approaches such as remuneration system that encourage teamwork and formation of vocational training and qualification improvement are the most popular.
More complex schemes (regular assessment workers interviewing, integration of tasks, monitoring of their implementation, etc.) are used less intensively. Very rarely mentioned methods include financial participation of employees in the firm activity and permission for distant work.

Use of the effective methods of knowledge management is one of the central elements of innovation management (Zavlin et al., 2006). According to the respondents opinion, not all Russian companies have resorted to them. In general, 29% of respondents are passive (Figure – 3.).

![Figure – 3. Knowledge management elements](image)

Source: Author’s calculation

Different practices of the companies represented about equally on the entire array. Incentives for employees to enhance knowledge exchange within enterprises and documented knowledge management systems occur most often.

### 5. Conclusion

Sustainable competitiveness is impossible without active innovation implementation. In all developed countries it is not just a theoretical dogma, but a usual business practice.

This paper addresses the research question: “Which innovation management instruments of construction innovation can be distinguished in Russia and how can they be used to manage innovation processes?” A research project was conducted to provide answers to this question.

A literature review was carried out to provide an overview of the definition of construction innovation management. The literature study was followed by an interview survey in which 48 Russian experts on construction innovation were interviewed. The
interviewees were asked to reflect on the background and characteristics of the instruments of innovation management as an element of firm-level innovation strategies.

As can be seen from the study, Russian construction companies do not pay adequate attention to the development of the corporate culture which stimulates internal firm innovation. They weakly involved in the processes of inter-firm scientific and technical cooperation allowing to obtain, use, and integrate of information and new technologies from external sources. It puts obstacles in the way of innovation diffusion, rapid commercialization, reaping the benefits from the use of own and borrowed technologies.

The findings of the research results are primarily interesting as a useful source of information about the specifics of the innovation development of the Russian construction industry as well as dominant models of innovative behavior of companies and effectiveness of their strategies. This information complements the available statistical information. It allows to refine the analytical conclusions about prospects of increasing the level of innovation activity in the real economy and strengthen the validity of public policy recommendations.

References


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**Apstrakt**

*Danas, svesno upravljanje inovacijama u građevinskim firmama postaje sve neophodnije. Istraživanja se bave upravljanjem inovacijama kao elementom strategije širenja inovacija na nivou preduzeća. Kao deo šireg israživanja ruske građevinske industrije sprovedena je anketa a neophodni podaci prikupljeni su pomoću upitnika. Upitnikom je traženo od ispitanika da pruže konkretne podatke o vrsti usvojene inovacije, preprekama u inovacijama i širenju strategije u promociji inovacija. Osnovni cilj rada je pronalaženje metode i prakse upravljanja koje će koristiti građevinskim firmama da bi postale inovativne.*

**Keywords:** upravljanje inovacijama, građevinska industrija, Ruska federacija