

Improvement of the management subsystem in the economic mechanism of the construction enterprises, taking into account the innovative component

Natalia Shchepkina^{1,*}, and Natalia Meshkova²

¹Moscow State University of Civil Engineering, 26, Yaroslavskoye Shosse, Moscow, 129337, Russia

²Vladimir Dahl Lugansk State University, Molodyozhnyj quarter 20a, Lugansk, 91034, Ukraine

Abstract. The scale and the level of the scientific developments in forming of the economic mechanism for managing innovative development, the search for the main factors that hinder the innovative activities of the enterprises and grounding of the mechanisms for attracting innovations into production remain insufficiently studied. The article presents recommendations on forming the economic mechanism for managing the innovative development of the construction enterprises. Quality assurance is understood as a system of measures that constantly maintain consumer confidence in the product quality. Accordingly, the role of the personnel of the enterprise increases significantly. Therefore, it is necessary to pay great attention to the functioning of the following principles: labor collective; machines; materials; method; sphere. Considering this fact, the mechanism for maximizing the management of the innovative development has been proposed, which is based on the principles of management, on the principles of the quality system and the improvement of the construction enterprises activities.

1 Introduction

In the conditions of the constant transformation of the forms and methods of the state influence on the development of the national economy, solving the problem of the economy formation, enhancing innovation, the transition to the innovative development model remain relevant for our country.

The implementation of the innovative model of the economic development requires the study of the various objects and phenomena as a system, a complex and multifunctional mechanism that is not limited to the reproduction of changes only in science, technics, technology, but also combine investment, financial, monetary policy. The existence of the above mentioned factors requires the improvement of the mechanism for managing innovative processes both at the state level and at the level of regions and enterprises.

The increase in the efficiency of the innovative activity of the construction enterprises is proceeding at a rather slow pace.

It should be noted that the pace of the innovative development of the construction enterprises is very slow today and the reasons for this fact are [1]: the low level of budgetary funding for scientific research; the unsettled legal framework and lack of own funds of the construction companies; limited, inaccessible information on domestic and foreign experience in the implementation of the innovative projects and scientific

developments; the low level of development of innovation and investment infrastructure; high degree of economic risk; the low level of innovative culture of the personnel of enterprises; the high cost of innovations and the uncertainty of the timing of the innovation process; the low level of development of the research base in the construction industry; the complexity of the conditions for cooperation with other construction companies and scientific organizations; containment of the innovative projects by the administrative obstacles and regulations; conservative thinking of the leading authorities; the low quality of building materials, mismatch of innovations with the paradigm of the urban planning environment that has developed over the years, etc.

The main problems hindering the innovative development and working out of the innovative development program for the country, for the industries and regions and for each science-intensive or high-tech enterprise, taking into account the provisions of the regulatory legal documents, such as: Strategy of Innovative development of the Russian Federation for the period until 2020 and the Decree of the President of the Russian Federation dated December 1, 2016 No. 642 „About the state service of the Russian Federation”, „Strategy of scientific and technological development of the Russian Federation” [2] are noted in the works by A. Bahauovna [3-4], T. Miroshnikova and N. Taskaeva [5], N. Shchepkina [6-7].

* Corresponding author: natasha.chepkina@mail.ru

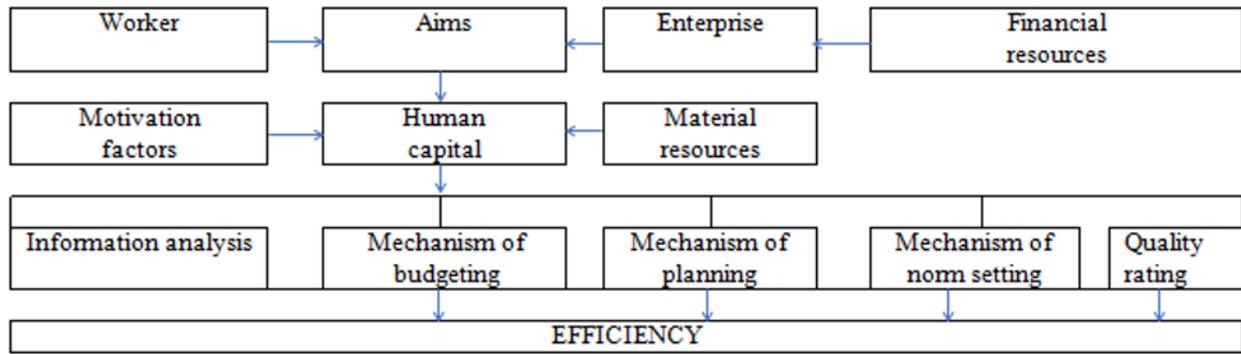


Fig. 1. Scheme for the implementation of the economic mechanism for managing the innovative development of the construction enterprises.

2 Materials and Methods

The scientific researches have shown that the construction companies will work effectively when they implement the economic mechanism for managing innovative development. The introduction of this economic mechanism provides for the organization of innovative activities at construction enterprises using the new equipment and technology. This organization in the system of the economic mechanism for managing innovative development at the construction enterprises will be effective in the case when the capital costs for the introduction of the new equipment and technology will give an increase in positive financial results, that is, to obtain an economic effect [8].

According to the philosophy of the quality system, the effectiveness of quality management depends on three main factors:

- 1) deep understanding of the need for continuous quality improvement by the top official at the enterprise;
- 2) investing not in the equipment, but in people;
- 3) transformation or special creation of the organizational structures for the total quality management.

The organization of the innovative activities in the management system for innovative development based on the introduction of the new equipment and technology is aimed at improving the quality of products and the quality of labor. Such quality assurance should be understood as a system of measures that constantly maintain consumer's confidence in the product quality. Accordingly, the role of the enterprise personnel also significantly increases [9].

Therefore, it is necessary to pay great attention to the functioning of such principles: people (information, motivation, qualifications, training, labor collective); machines (equipment, fixtures, tools); materials (purchased raw materials, parts, semi-finished products, components); method (organization systems, leadership style, technology); environment (working conditions).

3 Results and Discussion

Taking this fact into account, we propose a scheme for implementing the economic mechanism for managing innovative development, based on the principles of management, the principles of the quality system and the improvement of the activities of the construction enterprises.

As seen from Fig. 1, the implementation of the economic mechanism for managing the innovative development of the construction enterprises covers mechanisms for ensuring the quality of regulation, planning, budgeting of the innovative products, which provides using the information analysis in order to achieve strategic goals and to maximize activity results.

The transition to the innovative model of the economy leads to the intensification of the activity of the construction enterprises aimed at producing high-quality high-tech products which are competitive both in the domestic and foreign markets.

The necessary condition for the development of innovation is the development of human resources, the formation of the new labor mentality in the context of the innovations introduction, mastering of professional knowledge [10]. The implementation of the proposed mechanism is possible only when the company will use the personnel component of the innovative development. We offer the measures to stimulate the development of the personnel component of the innovative development of the construction enterprises (Fig. 2).

In the process of implementing the economic mechanism for managing the innovative development of the construction enterprises, it is necessary to take into account that the personnel development policy is one of the main tasks of the enterprise in order to preserve and to accumulate the innovative potential, to ensure the quality and competitiveness of products. Among the problems requiring theoretical and methodological study in the context of market economy, the problem of personnel management with the aim of introducing new equipment and technology in the context of the innovative development and achieving the high level of enterprise is especially urgent.

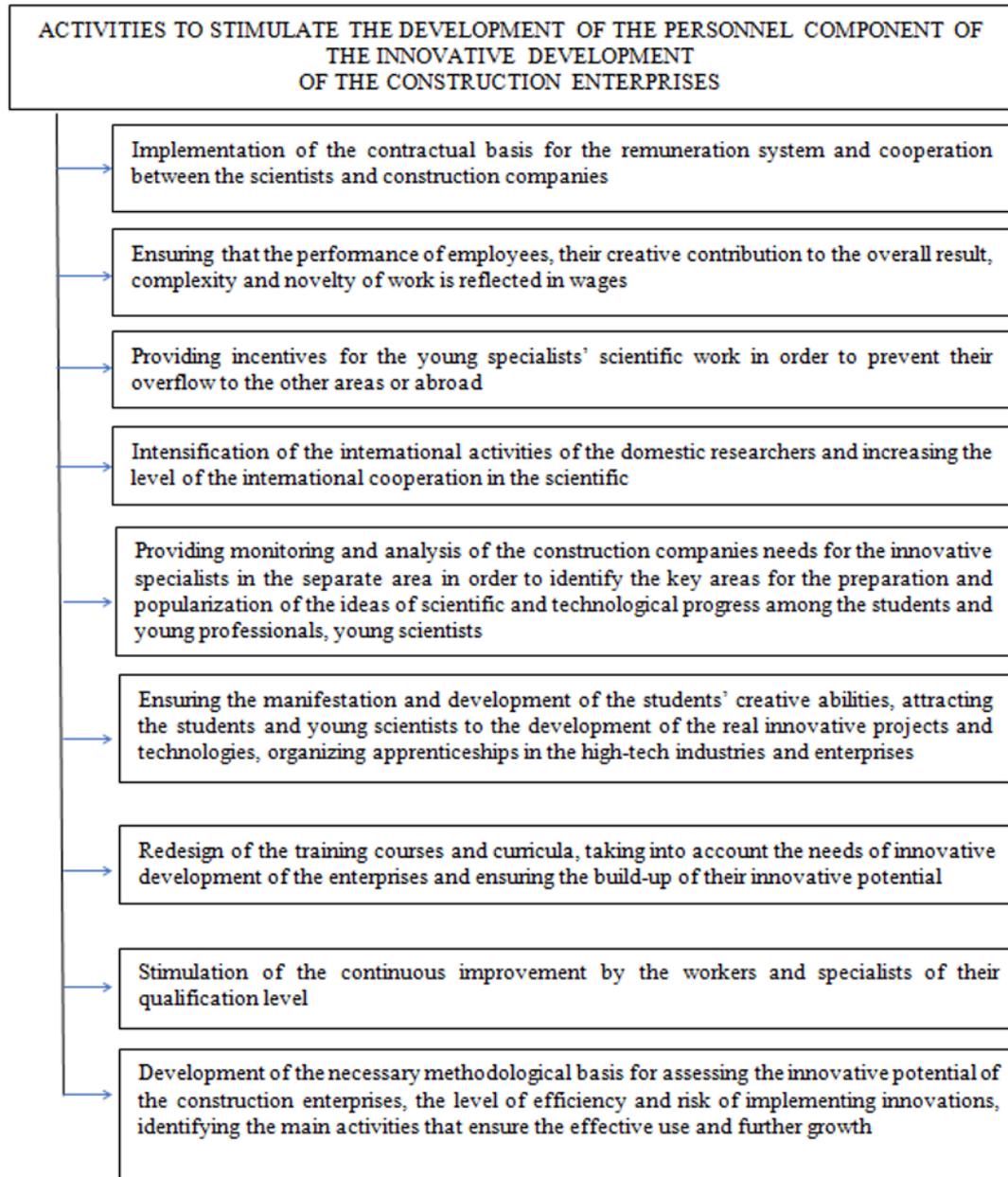


Fig. 2. The main activities to stimulate the development of the personnel component of the innovative development of the construction enterprises.

From the above mentioned information it follows that the significance of the personnel management process at the enterprise is ambiguous. This is confirmed by the fact that one of the main concepts of the quality system is the development of personnel and their involvement in improvement. It is the personnel that should be considered as the creative potential that affects the efficiency of business entities functioning. Systems of the moral and material incentives for employees should be aimed not only at fulfilling the set goals, but also at the improvement process [11-13].

To achieve successfully the perfect level of functioning of the economic mechanism for managing the innovative development of the construction

enterprises, it is advisable to intensify work in the following areas:

- introduction of the innovative model of personnel development, which would contribute to the formation of those properties which are necessary for the effective innovative development;
- the use of the innovative approaches to improve the personnel policy;
- attracting the creative young personnel;
- investment in innovation and personnel development;
- application of the methods to overcome the resistance of personnel to innovations.

The scientific researches have shown that the successful implementation of the economic mechanism

for managing innovative development and achieving enterprise excellence is possible if the staff is highly professional. The experience of many enterprises has shown that investment in the new equipment does not lead to the labor productivity increase if the „human factor” is not taken into account, that is, if large capital investments are not made simultaneously in personnel training, creating a personnel reserve, and introducing the new principles of labor organization [14-23].

The concept of the quality system only gives an idea of the general approaches to high-quality personnel management of the enterprise. Each enterprise must choose its own path to it. High-quality personnel management will ensure its effective use, which in turn will ensure the increase in production and sales of products, income; reducing costs and, as a result, increasing the competitiveness of the innovative products in general.

The growth of income with the effective use of personnel is a consequence of the increase in labor productivity of everyone working in the workplace: the increase in labor productivity is an element of management of the economic mechanism for managing the innovative development of the construction enterprises.

Therefore, in the process of using the economic mechanism for managing the innovative development of the construction enterprises in order to take into account the influence of the innovation component on labor productivity indicators, the methodological approach has been developed to determine the influence of the innovative component in the economic mechanism for managing innovative development on the volume of production, which takes into account the level of scientific and technological development at a suitable point of time that enables the construction companies to determine the effectiveness of their activities in the future.

The measure of the novelty of the equipment used in the enterprise determines its productivity and the level of the scientific and technological development.

The model with endogenous task of the processes of creation and dissemination of knowledge involves the determination of production volumes depending on the component of innovative development.

The output of the enterprise is characterized by the following production function:

$$VP_t = P_t \times \Sigma OF_t^\alpha \times \Sigma P_t^\beta, 0 < \alpha < 1, \beta > 0, \quad (1)$$

where VP_t – production of innovative products of the enterprise, ΣOF_t^β - the cost of the fixed assets on which the innovative products are produced, ΣP_t^β - the number of personnel engaged in the production of the innovative products.

In order to take into account the lags in the distribution of the innovative technologies in the production function, the parameter P_t was introduced, representing the level of the scientific and technological development of the enterprise at the time point t . P_t represents the cumulative productivity of the various factors.

The output of the enterprise per worker, that is, labor productivity, taking into account the innovative development of the construction enterprise, can be expressed in this form:

$$VP_{1/t} = P_t \times \frac{\Sigma OF_t^\alpha}{PP_t} \times \Sigma P_t^\beta \quad (2)$$

where PP_t – all the employees of the enterprise.

In the case, when $P_t = 1$, this is an indication that enterprises use outdated equipment and do not introduce the innovative technologies, and when $P_t > 1$, the enterprises introduce the innovative technologies and innovative equipment successfully.

The parameters α and β characterize the technology used by the enterprise in the production of products, and may have different meanings in the various industries.

4 Conclusions

The economic mechanism for managing the innovative development of the construction enterprises is the main component of the economic mechanism, which provides for the presence of a set of economic methods, ways, forms, tools and levers through which the economic development and relations are managed in order to influence the final results of the enterprise effectively.

The concept of management of the innovative development based on the introduction of its economic mechanism is proposed, aimed at increasing the competitiveness of the products of the construction enterprises on the basis of the innovative activities, which allows you to change the range of products, to improve its quality, to reduce production costs, ensuring the achievement of the positive financial results.

References

1. Silva B, Khan M and Han K 2018 J. Sustainable Cities and Society. 38 pp 697-713
2. Strategy of Innovative development of the Russian Federation for the period until 2020 and the Decree of the President of the Russian Federation dated December 1, 2016 No. 642 „About the state service of the Russian Federation”, „Strategy of scientific and technological development of the Russian Federation”
3. Bahauovna A. and Bahauovna A. 2016 J. International Journal of Applied Engineering Research. 11 (9) pp 6808-6816
4. Bahauovna A and Bahauovna A 2015 J. International Journal of Applied Engineering Research. 10 (23) pp 43446-43449
5. Miroshnikova T and Taskaeva N 2016 J. MATEC. 73 123284
6. Shchepkina N 2019 J. E3S Web of Conferences. 138 02011

7. Shchepkina N and Kramchaninova M 2018 J. Economics and Entrepreneurship: International Scientific Journal in Economics. 9, pp. 686-689
8. Anagnostis K and Alexios K 2014 Procedia Economics and Finance. 9, pp. 120-132
9. Verstina N and Evseev E MATEC Web Conf. 106 (2017)
10. Bagautdinova N, Sarkind A, Gafurovc I 2014 Procedia Economics and Finance 14, pp. 23–29
11. Kiseleva E, Nekrasova M, Mayorova M, Rudenko M and Kankhva V 2016 International Review of Management and Marketing 6 (95)
12. Gupta S Malhotra N 2016 Journal of Business Research. 69, pp. 5671–5681
13. Bolotin A and Bakayev V 2017 Journal of Human Sport and Exercise 12, pp. 405–413
14. A.K. Orlov, I.Y. Chubarkina, MATEC Web of Conferences 106, 08015 (2017)
15. V. Gasilov, N. Anisimova, I. Provotorov, MATEC Web of Conferences 106, 08035 (2017)
16. A. Larionov, E. Nezhnikova, International Journal of Applied Engineering Research 6, 4433-4439 (2016)
17. A. Jones, G. Fallon, R. Golov, European Business Review 12(4)
18. E. Nezhnikova, R. Obukhov, MATEC Web of Conferences 106, 08025 (2017)
19. V. Kankhva, D. Silka, Procedia Engineering 165, 1337-1342 (2016)
20. D.N. Silka, MATEC Web of Conferences, 07012 (2016)
21. Shchepkina, Natalia, Olga Boyarskaya, and Natalia Meshkova. "Development of mathematical model for assessing social and economic state of region." E3S Web of Conferences. 210 (2020)
22. A. Marshall, Principles of Economics (Macmillan and Co. Ltd., London, 2008)
23. T.K. Miroshnikova, N.L. Kuchugin, Procedia Economics and Finance, 434 (2015).