



UDC 330.322.2:624(477)

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## MODELING OF INVESTMENT AND CONSTRUCTION ACTIVITIES IN UKRAINE

The features of the building, as the economic process in terms of economic modeling, are considered. The modeling of this process and strategy development of condition and investment in construction are determined.

**Keywords:** construction, economic modeling, dynamic simulation, investment and construction activities, investment-building complex modeling processes.

### Шут С.О. МОДЕЛЮВАННЯ ІНВЕСТИЦІЙНО-БУДІВЕЛЬНОЇ ДІЯЛЬНОСТІ В УКРАЇНІ

Розглянуто особливості будівництва, як економічного процесу з точки зору економічного моделювання. Визначено методи моделювання, умови формування стратегії розвитку та інвестиційної діяльності у будівництві.

**Ключові слова:** будівництво, економічне моделювання, динамічне моделювання, інвестиційно-будівельна діяльність, інвестиційно-будівельні комплекси, моделювання процесів.

### Шут С.А. МОДЕЛИРОВАНИЕ ИНВЕСТИЦИОННО-СТРОИТЕЛЬНОЙ ДЕЯТЕЛЬНОСТИ В УКРАИНЕ

Рассмотрены особенности строительства, как экономического процесса с точки зрения экономического моделирования. Определены методы моделирования, условия формирования стратегии развития и инвестиционной деятельности в строительстве.

**Ключевые слова:** строительство, экономическое моделирование, динамического моделирования, инвестиционная и строительная деятельность, инвестиционно-строительные комплексы, моделирование процессов.

**The problem of study.** The building complex is one of the most important systems of the economy, which depends on the efficiency of the entire economic system of the country. The importance of this complex for the economy can be explained as follows: the building complex, probably more than any other sector of the economy, creates a large number of jobs and consumes the products of many industries. Moreover, noteworthy construction is known, the construction industry and construction activity – is the core of the economy. Without the intensive development of the construction can not speak confidently about the success of the economy. Activation of investment is not only a basic condition for removing the construction industry out of a deep crisis, but the most important determinant of its future development on innovation and investment basis in accordance with the requirements of time, requiring not only of institutional reforms, but also of involvement in the construction industry of large-scale investment.

**Analysis of recent research and publications.** Models of investment risk in investment and project management study examined following scientists: S. Karynton, H. Semenova A. Serikov, R. Tyan, I. Hryshenko, Yu. Kirichuk Yu. Orlovska, W. Burke, V.A. Wolf, V. Savchuk, research papers which were used in writing this work.

**The main of article** are the features of the building, as the economic process in terms of economic modeling. The definition and justification of the priorities improving the implementation of investment policy in the construction industry, outlining the basic methods of modeling the conditions of development strategy and investment in construction are considered.

**The result of research.** The building complex of the country by creating a significant number of jobs and the manufacturing process using the products of many industries – provides the basis for the development of other sectors of the national economy. The structure of this complex includes the actual construction; industry mining and construction materials, manufacture of building materials, machinery and equipment for construction; organizations ensure compliance with

research and design work for various building complex, state and regional regulation of building relationships in t. h. organs of state Architectural Control; Building education. As part of the building complex is also the investment sphere entities, namely all forms of property investors, investment banks, insurance companies that specialize in insuring construction risks; Mediation and engineering organizations that provide related services to participants of building relationships [1, p. 531]. The real state of the building complex is primarily dependent on the situation in the construction, whose main task is to create and update the material assets of the economy.

The construction, being capital intensive industry, largely depends on the volume of attracted investments and investment activity; however, difficult economic conditions in our country do not contribute to the investment attractiveness of the domestic construction.

The construction activity is defined in the literature on the one hand, as a branch of material production, on the other – as the activities associated with the construction work on the other – as a branch of material production, construction and reconstruction of buildings. In terms of technical and engineering construction – a type of industrial activities related to the design and research, the construction of buildings of different values, reconstruction, modernization, refurbishment, redevelopment and others. In economic terms, construction is a branch of the national economy.

Modern concepts of investment involve investment in fixed assets under the investment project. For construction projects construction industry enterprises have multiple funding sources – own funds, funds accumulated from the sale of real estate under construction and bank loans, but the main source of funding for the further means acting project owners.

Between the options of investment attractiveness of the industry and the level of efficiency of enterprises are closely interrelated – the attractive investment climate and greater direct interest of investors in projects, the better the performance of the construction companies and larger volumes of products manufac-

tured by them [2, s. 240].

If we consider the features of the building with a systems perspective, economic and mathematical modeling, the investment and construction project as a system consists of separate elements, each of which has its own properties that achieve the goal of the system. These elements are combined and interact so as to ensure the existence of the system and an end. The most important features of the building as a dynamic system are its inertia and stochastic. The inertia is expressed through its uneven use of production resources, retention management solutions and through the influence of the environment. Stochastic system construction is expressed not only through the influence of stochastic factors, but also because of its behavior stochastic elements (tools and objects of labor, experts) [3]. This is the result of stochastic there are many options for organizational and technological solutions depending on the operating conditions of the manufacturing process. Pronounced stochastic construction requires a committed regulator and, above all, a highly efficient system of economic governance. In the construction of control can be a construction company itself, and directly manufacturing process. Construction companies of any level are dynamic systems. The dynamics of these organizations, due to the changing conditions of their operation, changing restrictions imposed on their environment. So changing types of buildings makes it necessary to modify Machines, modernize production base construction company. Feature construction output is characterized by the interchangeability of resources and ways of organizing the production process.

Multivariate methods of production makes it relevant best choice among acceptable because of limited production resources of limited production resources. In the production process involves a large number of its own units and even other organizations, as construction companies should be seen as large and complex production systems. The hierarchical structure is occurred only information processes, and the lower – information processes are closely intertwined with the real material and production processes.

The purpose of investment and construction project as a system and its elements determined, above all, its socio-economic and industrial character. The main elements of the construction system – employees in the workplace combined with some common social and business interests. Because the material resources used in the production process and the finished product its own construction company in contact with other organizations, combines them into a single economic system. The essence of the process of managing the construction process is a meaningful impact on building the organization and its divisions to achieve the goal of production. The impact of a product subject control is transferred to the facility management which aims under that influence its development towards the goal.

Economic methods of project management can build a model of the optimal evaluation of the implementation of investment projects and determine the dynamics of the effectiveness of implementation of each project. The result calculation for model allows determination of the effective implementation of the dynamics of aggregate investments in time based on funding opportunities. Economic management methods provide priority to management mechanism to improve the efficiency of operation. To assess the effectiveness of a project investment and construction method allows you to select the priority areas of investment with limited

monetary value of the fund and incomplete information on some factors. Such interdependence, in turn, makes the construction industry is very sensitive to the economic situation in the country.

Today, the level of investment attractiveness of the building is quite low. To exit the crisis and improve performance of the construction company needs is to implement effective management decisions implemented to encourage innovation in manufacturing processes, including the transition to energy- and resource-saving technologies, reduction of construction products to the relevant standards and regulations. This will improve the quality and reduce the cost of building, restore demand. It is also important to ensure a sufficient level of funding to achieve what we can improve the conditions of bank mortgage loans.

In modern conditions most acute for the construction industry faces the problem of attracting investment. Reducing construction work is happening in Ukraine in recent years, primarily due to problems arising in the banking sector, the unstable political situation in the country and the world financial crisis, which led to outflow of foreign capital. Formation of investment appeal is under the constant influence of factors internal and external environment of the company. Investment attractiveness of the concept is subjective and depends largely on the perception of the object of investment potential investor, so before doing research investment attractiveness of the investee need to decide what is such an object and that is the main purpose for the investor when making investments. Where the investee is a separate construction company assesses the relative attractiveness, which provides a basis of comparison. In this case, investors are primarily interested in the competitive environment in the market for construction services [6, p. 21]. The specificity of the construction sector is capital intensive, adequacy of investments whose lack is a determining factor for further development of enterprises. Therefore, investigating the competitive environment and conditions of construction enterprises require special attention to investment processes in the country, region and industry, where there are one or another company that is the object of study. Increasing the number of developers in the construction market and the constant lack of construction financing, due to difficult economic conditions in the country leading to increased investment competition, which can be deployed both in macro business enterprises – reflecting the investment processes at the country level and in the environment – as a result of uneven distribution of investments between companies one activity [7]. The presence of intense competition, lack of funding and low solvency of the population creates barriers for the development of construction companies. However, information obtained during the investigation of a competitive investment environment for effective enterprise management system can be an effective tool for competition.

In developing the investment and construction activities are determined by the total volume of investments using their own methods of management capabilities to attract additional financial resources. Investment projects consistent with each other on the volume of resources allocated and timing of resource flows based on the total achievement of maximum economic effect.

The investment and construction activity leads to the development model of investment behavior of certain functions or achieve functional goals. In fact, investment activities integrated into the strategic development model and indicates the most preferred functional

purposes. The main objective of the investment and construction activity is supporting the overall strategy of development. The goals by using methods is increasing the efficiency of investment. Among these methods are five main groups: – planning methods; – methods of organization; – methods of coordination; – methods of motivation; – methods of control and regulation.

The first step in the development strategy of building enterprise in the conditions of investment should be competitive assessment of factors external and internal environment of its operations to align the external environment suitable internal capabilities integrated model of harmonizing competitive environment construction company by evaluating the intensity of competition in investment macro, meso – and micro-level qualitative characteristics and quantitative indicators, to improve the process in effective managerial decisions on strategy development.

The competitive environment of the investment is proposed as complex method, which is based on determining factors of integrated external and internal environment. The methods are calculated on the basis of partial indicators of quantitative and qualitative characteristics. Methods investment analysis of the competitive environment construction firm combines a quantitative assessment (based on application performance with quantitative expression), and their qualitative assessment (through verbal descriptions of the condition or characteristics of the investment or the use of peer reviews). Methods of analysis of investment intensity of competition environmental analysis provides meso and macro environment that is proposed be based on partial indicators characterizing the concentration of investments between competitors – recipients of investment resources.

The research domestic competitive environment construction company proposed to be based on analysis of its attractiveness, using a system of financial indicators – liquidity, business activity, financial stability and profitability.

These methods are essential for the formation of investment and construction activities. Investment and construction activity determines the choice, methods and directions of realization of the most efficient ways to upgrade and expand investment potential. Integrated use of effective methods of investment activity aimed

at achieving financial stability and creating the conditions for future development and investment activities implementing plans for the future in terms of the previously indicated parameters in terms of understanding the possibilities of program-based forecasting.

**Conclusions.** Investment activities of construction companies included a number of dynamic factors that are uncertain and risky nature of investors, because during the investment decision is necessary to build object modeling investment flows, forecasting investment needs and evaluation of future investments to avoid losses in future. The features of the building, as the economic process in terms of economic modeling problem of choosing the aggregate investment and construction projects with limited initial value funds. The concepts for the creation of system-dynamic model in which establishes the basic assumptions and causal relationship management model implementation of investment and construction projects.

The activation of investment is not only a basic condition for removing the construction industry out of a deep crisis, but the most important determinant of its future development on innovation and investment basis in accordance with the requirements of time, requiring not only of institutional reforms, but also of involvement in the construction industry of large-scale investment. Creating conditions for a massive influx of investment in the construction industry should be an essential element of strategic investment policy today.

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