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Functioning and development of construction formations in the market of multi–storey residential buildings

In the conditions of activity of construction formations and all participants in the investment process in the market of multi-storey buildings in various regions of the country, various organizational and technological situations arise most sharply, associated with the presence of a number of new features, when the nature of their work, interaction with each other, directions of development in the housing market change, taking into account accumulated experience, potential and types of specializations. This determines the need for the formation and use of rational forms of construction organization aimed at stabilizing the entire construction industry and processes, reducing the impact of changes in the external and internal environment, and various types of risk. The research methods used in the work are theoretical analysis, empirical study with subsequent generalization and systematization of the data obtained, in addition, the main scientific approaches were used: "dialectical", "systemic", "dynamic", "variant", "balance", "modelling". The object of the analysis is the organizational and technological processes of the construction of a real estate object and the activities of enterprises in the market of multi-storey residential buildings, taking into account the features that affect the stability and sustainability of the development of production processes.
The use of various mechanisms, measures in the field of technology use, rational forms of organization of material production in the activities of enterprises will increase the stability and reliability of their work under the influence of risks and uncertainty factors of construction production.
Keywords: *multi-storey residential buildings, housing market, developers, external and internal environment, features, building formations, sustainability, forms of construction organization, risks, organizational and technological mechanisms, life cycle*

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INTRODUCTION

The development of the construction industry, as well as the entire Russian economy as a whole, is associated with the need to solve a complex problem that reflects both global trends and internal barriers to development. This requires taking into account the main features and the need to develop mechanisms and measures to ensure the stabilization and sustainable development of enterprises in the housing market of multi-storey buildings.

The formation of such mechanisms for the development of construction enterprises is significantly influenced by a decrease in demand for construction products, as well as changes in norms and rules for the construction of buildings and structures. The need to solve this problem of forming mechanisms and measures for the stabilization and sustainable development of enterprises of the construction complex in housing markets in various regions of the country predetermined the relevance of this study.

The activity of construction organizations is largely determined by the degree of rational use of their organizational and technological potential, reliability and stability of development of all types of production processes, taking into account all types of losses, risk conditions and uncertainty, the values of which change under the influence of spatial, resource, time and cost parameters of enterprises and organizational and technological parameters of construction production, flexibility of organizational forms of their management, as well as taking into account the conditions of mobility and uncertainty associated with the dispersal of facilities under construction [1–4].

MATERIALS AND METHODS

The research methods used in conducting research are theoretical analysis, empirical study, followed by generalization and systematization of the data obtained. In addition, the main scientific approaches were used: "dialectical", "systemic", "dynamic", "variant", "balance", "modelling". The object of the analysis is organizational and technological approaches to the development of production processes and activities of construction formations in the market of multi-storey residential buildings.

The theoretical and methodological basis of the research is the scientific publications of foreign and domestic scientists and practitioners devoted to the study of the problems of the presence and influence of the peculiarities of the functioning and development of construction formations in the market of multi-storey residential buildings, taking into account various types of their specialization and the nature of the external environment. The empirical base of the study was made up of statistical and other information sources, materials characterizing the production and economic activities of business structures of various organizational and legal forms in the Russian Federation, expert opinions, legislative acts and other regulatory documents in the construction sector.

RESULTS

Construction companies, as well as all participants in the investment process of real estate construction in the housing market, are trying to create conditions that will ensure the maximum use of all their accumulated potential, ensure stable production and economic ties in order to maximize the interests of contractors, subcontractors and consumers of final products. This is usually achieved through the formation of rational forms of construction organization through the development of appropriate organizational and technological mechanisms and measures. At the same time, traditional forms and forms of organization and management do not lead to an increase in the efficiency of activities due to existing features and risk factors and uncertainty of construction production [5–7].

The Ministry of Construction and Housing and Communal Services of the Russian Federation annually conducts the necessary monitoring of housing situations in the territory of the country's constituent entities. In the context of the modern development of construction production in the Russian Federation, there has been a positive trend over the past few years in terms of housing commissioning [8–11].

The analysis of data on the number of floors of the housing stock carried out by developers in the Russian Federation showed that the most erected real estate objects in the housing market are multi-storey residential buildings, which use monolithic, panel construction methods to reduce construction time, the average height of such buildings exceeds 19 floors per one residential unit under construction (Fig. 1).

Modern construction production is characterized by the presence of a large number of: internal and external industrial relations and relations between participants; information flow in the field of management. At the same time, it is necessary to ensure the stability of the organization of the labour process based on the application of progressive norms and standards, which is the basis for the use of flow-based forms of labour organization in processes. In addition, the concentration of all types of construction production resources on production processes makes it possible to maximize the entire accumulated potential, which requires the implementation of the basic principles of flow-based forms of organization, namely:

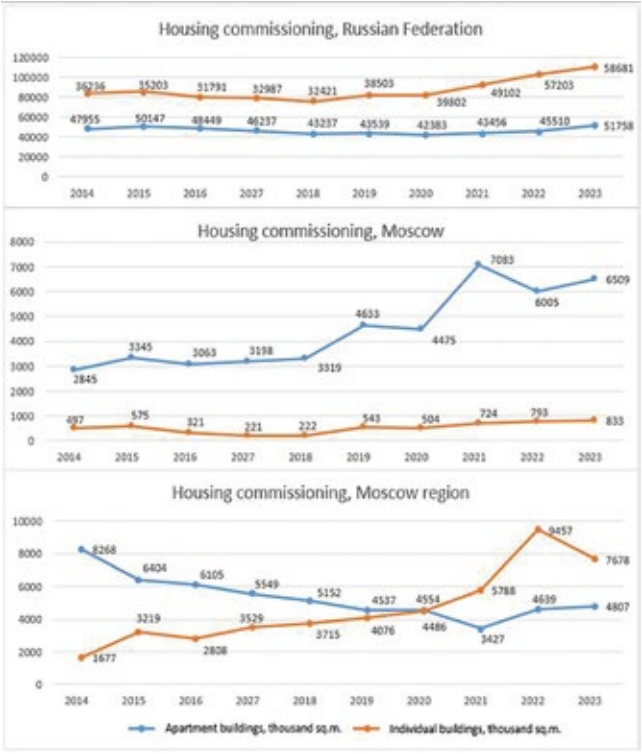

Fig. 1. Dynamics of housing commissioning in the Russian Federation, Moscow, Moscow region (by year)

Types of specialization and specifics of the development of the construction system

Types of specialization	Purpose	Characteristic
Territorial (external environment)	The orientation of the construction system to the construction of real estate for various purposes in a certain territory of the region, i.e. determines the specifics of the housing market development	The type of building is determined: multi-storey, low-rise, point, block, microdistrict, satellite city, etc.
Industry (external environment)	Orientation of the construction system to the specifics of real estate under construction within a specific branch of the national economy (construction) in the housing market	The type of real estate object, its spatial planning and design solutions are determined: monolithic, panel, brick, wooden, etc.
Subject (internal environment)	Orientation of the construction system to perform all types of construction and installation work when creating final products, (or in the workshop) production of fully finished products	The types of technologies and forms of organization of material production and management in the implementation of construction and installation work are determined, object flows in production processes are formed and organizational, technological and economic ties and relations between all participants in the process of constructing a real estate object are defined. The method of construction is determined: “on your own”, contractual, Project Management, real estate management as an investment asset (Asset Management), etc.
Technological (internal environment)	The orientation of the construction system to perform a certain type of work or provide services at different stages of the life cycle of a real estate object and the stages of development of the production process	The types of special technologies and forms of organization of material production and management are determined when performing work by specialized formations, specialized flows are formed in production processes and specialized organizational, technological and economic ties and relations between all participants in the process of constructing a real estate object are defined. The forms of construction and management are determined: internal; external management; mixed, etc.

In construction, thousand sq.m. (as of October 1 of the current year)

Developer / Year	2020	2021	2022	2023	2024
Samolet	1459	2169	3004	3643	5438
PIK	6780	5996	5954	5074	4720
FSK	1068	1339	1371	1894	2180
A101	596	796	757	1223	1421
MR Group	785	720	933	928	1115
Donstroy	533	1054	1181	1003	1099
Level group					809
Granel	901	1023	945	1223	799

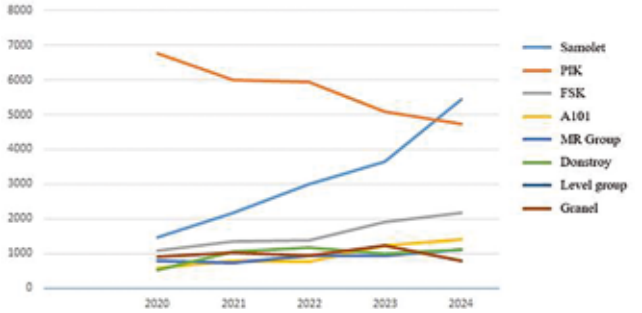

Fig. 2. Dynamics of housing commissioning by the main developers in Moscow (by year)

specialization, continuity, parallelism, rhythmicity, directness and automation [12, 13].

The following types of specializations are implemented in construction, namely: territorial, sectoral, subject, technological, detailed. The first two types of specialization. As a rule, they determine the territorial and sectoral features of the development of the multi-storey buildings market and the specifics of the territories themselves and are the external environment for construction formations of different levels. Other types of specializations determine the internal environment of their activities, which significantly affects the stability and sustainability of the development of all production processes (main, auxiliary, servicing) and the construction units themselves.

The choice of a rational option for the sustainable development of enterprises in the housing market depends on the existing features, the degree of influence of various groups of factors of the external and internal environment, types of specializations for the development of the housing market and construction production (Table).

In addition, the option chosen in this way creates all the necessary conditions for the formation of stable ties and relationships between all participants in the construction of real estate in multi-storey buildings [14, 15]. All these connections are concentrated and ensured through the main participant of this construction system, namely, the developer, who performs all the functions of managing the system based on the use of rational forms of construction organization, which contributes to an increase in the volume of final products (Fig. 2).

The dynamics of the main developers in Moscow shows that this trend takes place in modern conditions of the construction of multi-storey buildings.

CONCLUSION

Based on the results of the analysis, trends were identified that allowed us to draw the following main conclusions:

1. The main features of the functioning and development of construction production in the construction of multi-storey real estate buildings have been identified, which must be taken into account when introducing technologies and in-line forms of organizing material production in the main, auxiliary and servicing production processes, which contributes to the establishment of stable links between all participants in these processes [16–18].

2. Developers are the main participants in the process of constructing multi-storey buildings, on which the stability and stability of these relationships and the specifics of the development of both the housing market and the entire construction system depend.

3. It has been defined that the process of forming a system of relationships between participants in the construction of multi-storey real estate in construction is influenced by the peculiarities of their construction, a large number of factors of the external and internal environment, which must be identified and taken into account in further research based on the creation of necessary organizational and technological reserves when introducing flow forms of material production in the activities of construction organizations, taking into account their depth of specialization in risk conditions [19, 20].

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Особенности функционирования и развития строительных формирований на рынке многоэтажных жилых зданий

В условиях деятельности строительных формирований и всех участников инвестиционного процесса на рынке многоэтажных зданий в различных регионах страны наиболее резко возникают различные организационно-технологические ситуации, связанные с наличием ряда новых особенностей, когда меняется характер их работы, взаимодействия между собой, направления развития на рынке жилья с учетом накопленного опыта, потенциала и видов специализаций. Это определяет необходимость формирования и использования рациональных форм организации строительства, направленных на стабилизацию всего строительного производства и процессов снижения влияния изменений внешней и внутренней среды, различных видов риска. Методами исследования, применяемыми в работе, являются теоретический анализ, эмпирическое изучение с последующим обобщением и систематизацией полученных данных, кроме того, были использованы основные научные подходы: «диалектический», «системный», «динамический», «вариантный», «балансовый», «моделирование». Объектом анализа являются организационно-технологические процессы возведения объекта недвижимости и деятельности предприятий на рынке многоэтажных жилых зданий с учетом особенностей, учет которых влияет на обеспечение стабильности и устойчивости развития производственных процессов.

Применение различных механизмов, мероприятий в области использования технологий, рациональных форм организации материального производства в деятельности предприятий позволит повысить устойчивость и надежность их работы в условиях влияния рисков и факторов неопределенности строительного производства.

Ключевые слова: *многоэтажные жилые здания, рынок жилья, застройщики, внешняя и внутренняя среда, особенности, строительные формирования, устойчивость, формы организации строительства, риски, организационно-технологические механизмы, жизненный цикл*

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