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PUBLIC ADMINISTRATION BY THE MODERN INFORMATION TECHNOLOGIES IN CONSTRUCTION OF UKRAINE

Abstract. Key aspects of the reformation and development of the construction industry in Ukraine, based on world trends are considered. Development prospects and ways out of the crisis of the construction industry are formed.

In order to save the domestic construction industry, there was an urgent need for the establishment and application of modern regulatory, methodical, information, program and legislative provisions, modern methods of determining the cost of construction, management of investment projects in all phases of design, construction and operation. Their development towards further alignment with Euro standards – the key of improving of the investment climate in Ukraine.

Keywords: construction industry, information technologies, BIM-technologies, 3-D design.

ДЕРЖАВНЕ УПРАВЛІННЯ СУЧАСНИМИ ІНФОРМАЦІЙНИМИ ТЕХНОЛОГІЯМИ В БУДІВНИЦТВІ УКРАЇНИ

Анотація. Розглянуто ключові аспекти реформування та розвитку будівельної галузі України на основі світових тенденцій. Сформовано перспективи розвитку та шляхи виходу з кризи будівельної галузі. Для збереження вітчизняної будівельної галузі необхідно створити і застосовувати сучасне нормативне, методичне, інформаційне, програмне та законодавче забезпечення, сучасні методи визначення вартості будівництва, управління інвестиційними проектами на всіх етапах їх проектування, будівництва та експлуатації. Їх розвиток у напрямі подальшого узгодження з євростандартами – запорука поліпшення інвестиційного клімату в Україні.

Ключові слова: будівельна галузь, інформаційні технології, BIM-технології, 3-D проектування.

ГОСУДАРСТВЕННОЕ УПРАВЛЕНИЕ СОВРЕМЕННЫМИ ИНФОРМАЦИОННЫМИ ТЕХНОЛОГИЯМИ В СТРОИТЕЛЬСТВЕ УКРАИНЫ

Аннотация. Рассмотрены ключевые аспекты реформирования и развития строительной отрасли Украины на основе мировых тенденций. Сформулированы перспективы развития и пути выхода из кризиса строительной отрасли. Чтобы сохранить отечественную строительную отрасль необходимо создать и применить современное нормативное, методическое, информационное, программное и законодательное обеспечение, современные методы определения стоимости строительства, управление инвестиционными проектами на всех этапах их проектирования, строительства и эксплуатации. Их развитие в направлении дальнейшего согласования с евростандартами – залог улучшения инвестиционного климата в Украине.

Ключевые слова: строительная отрасль, информационные технологии, BIM-технологии, 3-D проектирования.

Target setting. Today, unfortunately, the state of the construction industry in Ukraine is unsatisfactory. Construction of industrial facilities, virtually absent, because such construction requires large investments, the state is not able,

today, to invest in the construction of large industrial facilities, and foreign investors in the current economic situation in Ukraine does not risk to invest heavily. Construction of social infrastructure (schools, kindergartens, etc.) entirely depends on financial revenues to local budgets on the willingness of local authorities and economic environment, which would allow to deploy the appropriate program development. Construction, transport and municipal infrastructure (roads, bridges, multi-junction, heat and water, drainage networks, etc.) depend on local budgets and from the state in strategic directions (metro, high-speed railways, tunnels, reservoirs, treatment plants, etc.). Residential construction – now the direction by which survives the construction industry in Ukraine, with it, 99,7 % financed by private investors [1].

Overall, the volume of construction, repair and restoration works in Ukraine ridiculously small and have great diversity and regionality.

In Ukraine, the need for building unlimited. Per capita of Ukraine in 2015 built 0,22 m² and should – 0,5–0,7 m² (Fig. 1, 2, 3).

So based on the above data on the state of the construction industry, we can outline the following issues:

- lack of sources of construction financing;
- high level of depreciation of fixed assets, their neglect through lack of investment demand;
- practical elimination of large construction units capable of performing multi-million dollar projects;
- imperfect pricing;
- bureaucratic obstacles to investment projects;

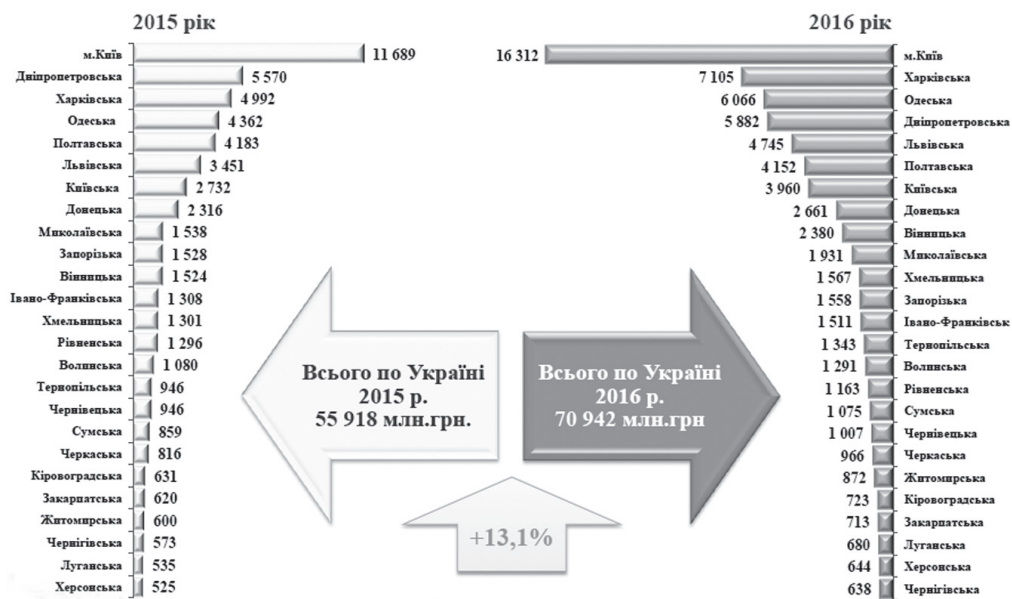


Fig. 1. The volume of construction works by region for 2015 and 2016, mln UAH
 Source: research of results of the Ukrainian Union of manufacturers of building materials

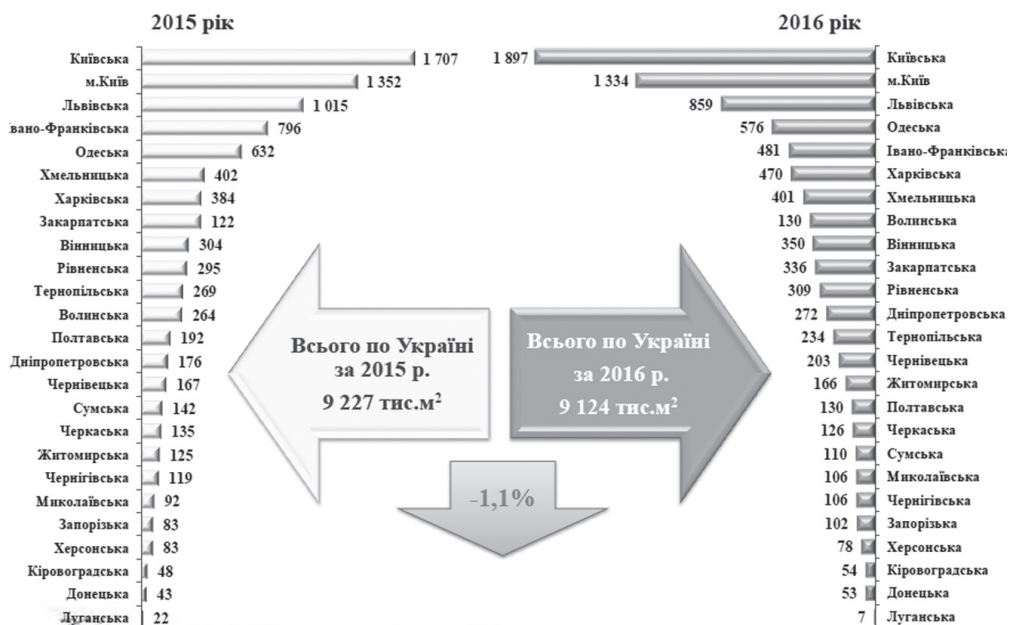


Fig. 2. Commissioning of housing for 2015 and 2016, thous. m², excluding housing, introduced in accordance with the temporary order
 Source: research of results of the Ukrainian Union of manufacturers of building materials

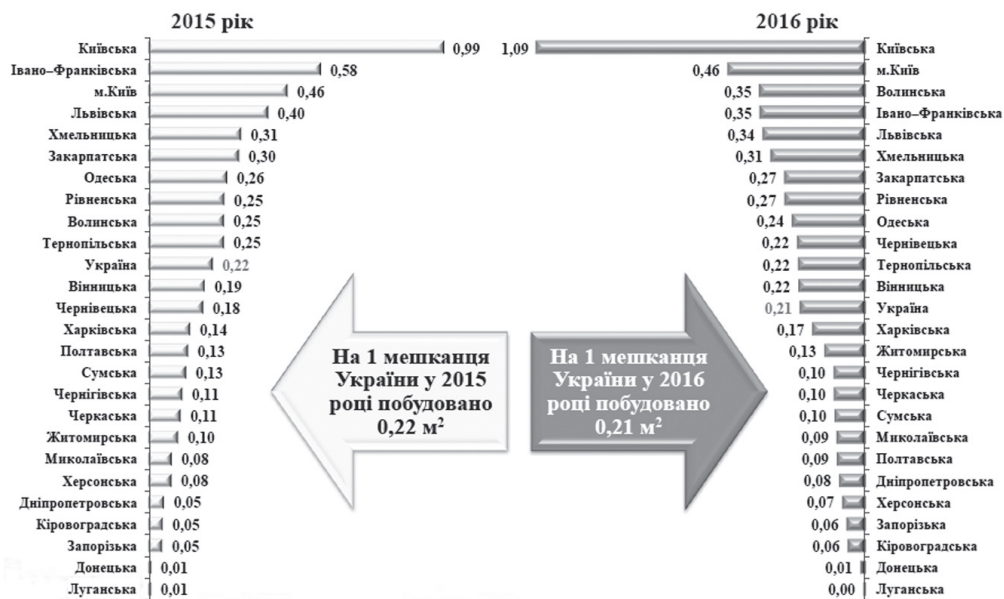


Fig. 3. Commissioning of housing for the 2015 and 2016 m² per 1 inhabitant, excluding housing, introduced in accordance with the interim order without the Crimea and Sevastopol City

Source: research of results of the Ukrainian Union of manufacturers of building materials

- lack of equal legal conditions for all participants of the investment process;
- imperfect system mechanisms of legal regulation of economic, social and legal relations in the housing sector and others.

But the primary problem faced by the construction industry is the creation of a favorable investment climate in Ukraine, and this, in turn, is possible only through the formation of a new digital culture of design and construction. The essential element here is the building Information modeling (Building Information Modeling – BIM). BIM-technology have great advantages and therefore should be widely used in Ukraine as in the EU [2].

Analysis of recent research and publications. Problems of investiga-

tion of information support in building reflected in the works of scholars such as I. Saliy, S. B. Sichniy, V. S. Sudac, M. Petrushenko, L. A. Rarok, A. Chub, L. M. Sahnovskyy, F. S. Seydaliyev, Y. I. Ternavskiy, O. S. Teletov and others. Despite the considerable number of works on the problems of digital design building, there are unresolved issue of the comprehensive diagnosis of the government concerning the use BIM-technologies in Ukraine and prospects of development for the enterprises of the construction industry.

The purpose of the article is the analysis of government on information support of construction, based on digital simulation, without which virtually impossible the further progressive development of the construction sector in Ukraine.

The statement of basic materials.

It has become quite clear that without the introduction of BIM-technologies, based on global trends, lagging of the construction industry in Ukraine only deepen.

Otherwise, under the current level of development of our construction industry, any foreign investor will not entrust their investments to our domestic firms. He comes to us with their project organization, with its contractor, or a management company with its own technology in the design and construction management, its highly qualified personnel. To our building specialties workers and engineering staff trust to perform only auxiliary and ancillary works.

BIM reflects virtually the entire life cycle of construction works, from conceptual design through to continue working drawings, construction and operation of its demolition. With this innovation, all participants have access to the virtual process control plans, models building project. Architects, developers, designers, engineers, workers of statics, engineers and operators work together [3].

Benefits of implementing BIM:

1. Improving of the reliability of cost. Since the additional work as a result of changed customer requirements is one of the major causes of increased costs in social construction.

2. Reduction of existing uncertainties and assistance that citizens feel more informed, which increases the acceptability of the project and eliminates the risk of protests of citizens.

3. The benefits in efficiency and productivity. You can largely avoid the

mistakes or gaps in the design because of the close relationship planners, through audits conflicts supported by information technology.

4. Obviously easier use of building settlements. If the project has to change, for example, due to changes in customer desires, the consequences in costs for the entire project can be obtained by using precise, based on the model of calculation of cost and faster than the traditional design. Errors resulting complex changes can be avoided by controlling collisions.

5. Reduce the risk of certain docking operations. This improves also planning the course of construction. It can be implemented on d ground, according to the optimized calculations. All the important data is available to all participants in real time, and so on.

Different countries have different experiences in implementing BIM-technologies in their countries, depending on the conditions of prevailing. This could be an initiative from below, by the way of joining relevant professional associations and public organizations or initiative from above, through appropriate legislation and enforcement.

Unlike many Western countries, Ukraine must still create the conditions of such implementation.

These preconditions must include the following actions:

- Conduct wide work about the alternative regarding the transition of the construction industry in Ukraine ov the BIM-technologies.

- Modern BIM – a process that is completely focused on computer processing of the all information for the

making of the effective decisions. The basis for the implementation of this process should be clear classification of all information environment of the construction industry in line with international standards.

Therefore, in terms of “information famine” that currently exists in the construction industry, a priority issue for his solution is the creation and use of modern building national classifier, which systematically classified and coded all the information related to the modernization of the existing regulatory framework design, construction and operation, and that will be harmonized with the already existing international standards.

Ukrainian building qualifier – is a tool for creation of a common information space of the construction industry, with which its necessary systematically fill this space with relevant information [4].

Addressing of this issue could make Ukrainian Institute of building materials, on which will create a modern legislative – information support construction, based on a digital simulation, which is essential for further development of the construction industry in Ukraine. Ukrainian Institute of building materials able: to organize collecting and providing this information to construction companies systematically generate a database (materials, structures, their producers and suppliers) and its support, in terms of partnership and mutually beneficial cooperation with all participants of the investment process.

It is clear that in Ukraine, the state governing bodies do not care about this issue.

Therefore, to keep up with the entire civilized world should create a professional team of associates, unite relevant professional associations and NGOs.

So, February 24, 2017 Ukrainian Institute of Building Materials organized the program “Innovation in Construction – Joint Projects” (hereinafter – the Program), that held in company producing of mortars Siltec. From the Institute participated in the Program Director – Ivan Saliy and Deputy Director – Irina Chaplay.

Program participants were leading construction companies: PBG “Kovalsyka”, LLC “Beton Complex”, JSC “Terminal M”, Royal House, Agromat Decor “Soka” TM “TEPLOVER” and others.

During the event, were held acquainted with engineering and technological solutions of the PBG “Blacksmith”, presentation of business proposals, B2B.

Program participants noted that, to date, there is a need for a comprehensive system design and construction management, based on a single system of classification and coding of all information received to all participants of the investment process and were active in promoting this process.

Systematized information from manufacturers and suppliers of building materials, construction, engineering and facilities will ensure during the design, forming of a “library of structural elements”, with the detailing of all the geometric parameters and technical characteristics of the structural element for making the architect and designer of the relevant decision on the

inclusion of this element in project information model 3D.

On the next step of the design and the construction phase to the projected structural elements attached data due to the binding of these elements (materials, structures) to estimate the regulatory framework (price, manufacturer, region) and also technological conditions of use of these structural elements which provide the introduction of advanced technological processes in construction – determining of the value of work that is consist of: with the cost of materials, use of technology, tools and complexity of work, affecting the timing and the final cost of construction in general, that when forming 4D and 5D models under construction phase.

In the future, on the next phase 6D – operation of the built objects, to the each structural element specifications for its operation, repair are attached etc.

A prerequisite for the implementation of BIM-technology is also the solution of the following issues:

- automated exchange of information and databases in an open format, in accordance with accepted international standards;
- ensuring of the implementation in schools curriculum for training and retraining of qualified specialists for training and practical use BIM-technologies in the design, construction, production, operation and logistics, using international experience;
- interoperability of all public organizations and associations, business partners, including media facilities, including internet resources on organizational, informational, software and minor (at this stage) financial security

when implementing BIM-technologies in Ukraine.

Only after the implementation of these prerequisites, can we talk about the beginning of the practical implementation of BIM-technologies in Ukraine.

Implementation of these preconditions has no chance of implementation without proper attention to professional associations and NGOs, investors, heads of design, contractors, manufacturers and suppliers of inputs for construction [5].

Conclusions. Summarizing, we can say: BIM contributes to more accurate design, description of work, estimated cost and the best course of construction planning. Many risks, such as design, engineering, project approval risks, risks interfaces, etc. can be reduced by using BIM and increase transparency and acceptability, such as the participation of citizens.

Thus, one could argue – Ukraine has all the prerequisites for the rapid and successful implementation of BIM-technology. We need only to start moving in that direction. The authorities should, thus, be ahead as the main developer, accelerating culture change design and construction. That's when we succeed in global digital-century to preserve the central role of Ukrainian competence in design and construction, and further strengthen the foundation of our prosperity – through innovation and competence.

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