Project management software in Ukraine

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Abstract. Modern consumers are interested in receiving goods within a specified time frame, of the required quality and quantity. Such requirements apply to all goods and services, including those in the construction industry. Features of the construction industry are due to a variety of technologies, materials, equipment used for the construction of facilities. This justifies the need to implement automation tools for planning processes, determining the volume and delivery schedule of production stocks, using labour resources, forming a financing schedule, identifying risks affecting processes and approaches to minimizing them. To solve such problems, special attention in modern conditions is paid to project management in construction and its software. A project is understood as a process which is a set of sequential actions, the implementation of which contributes to the achievement of the set goal. The project is characterized by limitations in terms of time, cost and resources used. In project management, software products such as Primavera Systems, Inc (Oracle), Spider Project, Microsoft Office Project, YouControl. It is their use, advantages and disadvantages that are discussed in the paper. Particular attention is paid to the Microsoft Office Project software product, which has the following advantages: user-friendly interface and ease of use, flexibility of adaptation to user needs, clear and convenient analytical charts and the ability to manage them, availability of support that allows you to quickly master and use the software product, availability of reference materials.

1. Introduction

Digitalization is relevant for any type of activity in the modern period. Any manufacturer or distributor pays more and more attention to the improvement of their activities. Improvements should be comprehensive in the following areas: marketing, calculation of financial flows, calculation of production processes, economic security, logistics and others. The construction industry is no exception. Companies in the construction industry must also speed up their processes in order to maintain their competitiveness and position in the market and to develop.

The purpose of the construction industry in the state economy is to create new funds for housing, social facilities, infrastructure and production assets [2,3]. The need to speed up data processing has long been a necessity. Construction companies, using computer technology or partnerships with digital enterprises, are more competitive [1].
Much attention is paid to logistics in construction, digitalization of information in the construction supply chain [10]. Revealed a significant backlog of enterprises in this industry in the implementation and use of digital technologies [7]. Also, studies have been carried out on digitalization in the environment of the construction industry [13]. However, the topic of introducing digital technologies directly into construction production in Ukraine remains poorly understood.

2. Basic software in construction

Projects for the construction of residential buildings and commercial real estate are developed systematically, taking into account the needs of the market, the characteristics of the settlement, industry. It also takes into account the requirements of environmental protection, legal regulations and restrictions.

The main design task is to develop the most optimal project for both stakeholders and the contractor. The most relevant criterion for the implementation of projects in construction should be considered the term of work without loss of quality.

It is customary to understand a project as a process that consists of a set of coordinated, managed activities. The project must have a start and end date. The project always has a goal, restrictions on funds and resources [6]. The implementation of projects in construction is based on many factors: the supply of materials, the logistics component of the enterprise, reliable suppliers, the project management system, the flow of financial resources, and more. The digitalization of these flows will increase both the terms of work execution and the quality of products, the quality of management, the competitiveness of the enterprise in the market.

In Ukraine not all construction companies use project management software. These programs provide an opportunity to use them in modelling the construction of residential buildings and other functions. The article provides an overview of the possibilities of using such programs as: Primavera Systems, Inc (Oracle); Spider Project; Microsoft Office Project; YouControl.

2.1. Primavera Systems, Inc.

Software Primavera Systems, Inc. – this is the specialized software of the company Primavera Systems, Inc. for project management. The software entered the US market in 1983. It was originally developed for strategic project management and has evolved continuously over the years.

Oracle offers to improve construction management software with the help of its product. Primavera will provide transparency and control, optimize supply chain tracking and data security [4]. Also, when using this software, productivity will increase, risks in project processes will decrease. The software is widely used in many countries and industries. In 2005, before the release of a new version, the company announced the unification of the names of all numerous software modules. Now professional project management software is simply called - Primavera.

The Primavera Software allows the company to record and manage all data sets on projects and financial capabilities of the organization. The software is aimed at project managers operating in various industries. A variety of software modules will help to optimize all the processes occurring during the implementation of a particular project.

The company continues to develop and improve specialized project management software. Primavera is a powerful and reliable way to plan, execute and manage projects. The product allows to manage construction projects of any size and complexity.

Today Primavera is practically the standard in the field of project management software in many countries of the world. The capabilities of the software package certainly make it possible to simulate the processes of erection of residential buildings.

However, the disadvantages of this product include a rather high cost and difficulty in mastering the program. Often an organization is forced to bring in additional project scheduling specialists.

2.2. Spider Project

In recent years a Russian development - the Spider Project software complex - has become quite widespread in the project management software market. The first version of the system was released in 1992 and already in 1993 was demonstrated at exhibitions in Russia, as well as in Germany.
Among the users of the system are representatives of many sectors of the economy - construction, space industry, oil refining, tourism, energy and many others [8]. Among the users of the system are representatives of all sectors of the economy - Transstroy, Russian Engineering Company, Rocket Center im. Makeeva, Lukoil, Petrobras, Hill International, Odebrecht, Hidroconstructia, Mostogradnja, Thyssen Schachtbau, Embraer, Van Oord, Romtelecom, FUJIFILM Diosynth Biotechnologies, Brasilia Electric Company and many others [8].

In the process of expanding the functionality of the program, the peculiarities and needs of the market of the post-Soviet countries are taken into account. The methodology behind the Spider Project has a number of features compared to traditional approaches to project management. In this regard, the capabilities of the Spider Project product differ in many respects from what is offered by Western software vendors in the field of project management.

Spider Project software is designed for different user groups. It includes the professional system Spider Project Professional, as well as cheaper versions of Desktop (single-user version of the professional system) and Lite (version with limited functionality).

Some of the advantages of Spider Project as stated on their website are listed below:

1. The ability to schedule the timing of work based on their physical volume This function of the program is especially relevant when simulating construction processes. In the Primavera software package considered above, the concept of “scope of work” is absent.
2. The ability to use in projects any additional characteristics of work, resources and purposes, it is also very convenient when modelling construction processes.
3. Extensive opportunities for cost and resource analysis of projects. In one project you can conduct a parallel analysis of costs in different units and under different regulatory frameworks.
4. The built-in accounting system allows not only to adjust the remaining duration and volume of work but also to receive reports on the implementation of the project in any section and for any period of time.
5. Built-in project management guide fully covers international standards and takes into account the specifics of project management in post-Soviet countries.

This software package can be used and will be convenient for modelling the construction of residential buildings. The product has not yet received such widespread distribution as its Western counterparts (Primavera and Microsoft developments). But of course, it is a promising tool for building models of construction processes [5].

2.3. Microsoft Office Project.

The first commercial version of the Microsoft Office Project product went on sale in 1985 and since then for many years the program by the number of copies sold has been the most widely used project management tool in the world. The advantages of this program are a wide range of applications, advanced innovations that are implemented in each new version of the product.

Traditionally the product is available in two versions. These are Standard (single-user version) and Professional (corporate version).

Using Microsoft Project allows the following [9]:
- draw up a work production plan, which includes the timing of the work, the need for resources (people, mechanisms, materials, finances, etc.);
- calculate the project budget and distribute the planned time expenditures;
- calculate in time the project's resource requirements;
- develop an optimal financing scheme for work, supply of materials and equipment;
- analyse risks;
- determine reserves of time;
- effectively monitor the implementation of the plan;
- analyse deviations of the actual progress of work from the plan, timely and reasonably adjust the planned indicators;
- analyse deviations of the actual progress of work from the plan, timely and reasonably adjust the planned indicators.
This software has a number of undeniable advantages that have made it so popular in the project management environment. The main advantages are:
1. Intuitive interface and easy to learn.
2. Flexibility in customizing the program for specific needs.
3. Easily and efficiently analyse and manage charts.
4. Interactive step-by-step planning assistant that allows you to quickly master project management processes.
5. Ability to track the progress of a project at all stages of its life cycle.
6. A rich set of built-in reference materials designed for both newbies and project management professionals.

Microsoft Project is easy to use, convenient and in our opinion allows the user to solve almost any problem related to modelling the processes of building residential buildings.

2.4. YouControl.
The work of a construction company is based not only on project management. It is equally important to obtain reliable information when contacting subjects of the external environment. The YouControl software package is one of the software options for the Ukrainian market, which allows to identify unscrupulous counterparties.

YouControl is an analytical system for business intelligence and verification of counterparties in Ukraine. In this program, on the basis of open data, a dossier is formed for each company that operates within the country and changes in state registers are tracked. The capabilities of this program allow to visualize the connections between affiliated persons [11]. The technology used by this program allows, in a fairly short time, to obtain information on organizations or individual entrepreneurs from more than fifty state registers that is relevant at the time of the request.

One of the advantages of this software is that it has an “end-to-end search” feature that provides detailed searches on a single attribute. For example, a query by the name of a director will show to get information about all companies where he is a director, a founder. A complete dossier provides data on the status of the enterprise, its managers and beneficiaries, the financial and industrial group that the enterprise belongs to.

This function allows to instantly receive information about the reliability of future partners when working with external counterparties, enterprises or individual entrepreneurs. The automatic monitoring function is carried out every day and is based on the possibility of promptly receiving alerts by e-mail about new data on the bankruptcy of the counterparty, criminal cases, the occurrence of tax debt and other events.

The promptness of obtaining such information makes it possible to make timely appropriate decisions on interaction with counterparties that are losing their reliability. Checking the search for related persons makes it possible to preliminary determine the feasibility of cooperation with potential partners. Market analysis reveals for the sales department potential customers for goods and services by type of activity, the commercial department to compile a rating of potential competitors by type of activity and region, and the analytical department to identify industry leaders in terms of revenue and personnel.

The use of all these factors will significantly increase the company's competitiveness in the market and the efficiency of its activities. The study of the capabilities of the YouControl software package showed that the information obtained in advance about the financial condition, reliability and financial stability of potential partners allows us to assess the prospects for cooperation with them already at the stage of developing a strategic plan [12]. Further use of such software makes it possible to track and analyse the production and financial activities of counterparties in order to timely respond to negative changes.

3. Conclusion
In the modern world, quick decision-making is required at any level of project implementation. This is especially true for construction companies where large financial resources are involved in production and the coherence of the project stages affects the timing of the result, its quality and competitiveness.
Using project management software will provide many benefits to a construction organization. This will reduce the construction time, production costs, improve intra-industrial communications and logistics flows, and the quality of management.

It should also be noted that the use of modern information technologies allows not only to effectively build communication channels for internal affairs, but can also improve the establishment of relations with subjects of the external environment during joint activities.

If compare the capabilities of the three programs (Spider Project, Primavera and Microsoft Project) then Primavera has the widest functionality. However, due to the peculiarities of the development of the Ukrainian market today for enterprises that are engaged in the construction of buildings, it will be more relevant to use the Spider Project which covers international standards and takes into account the specifics of project management in post-Soviet countries. For enterprises that specialize in the production of construction products will can recommend Primavera or Microsoft Project. In this case it should be noted that Primavera is quite an expensive product and will not be available for small businesses. YouControl is a companion program the work of which is not directly related to the calculation and modelling of projects. However, it complements the project management capabilities of any enterprise and helps ensure economic security.

4. References

[1] Aghimien D, Aigbavboa C, Oke A, Wellington T, Moripe P 2020 Digitalization of construction organisations – a case for digital partnering, J. International Journal of Construction Management Available at: https://doi.org/10.1080/15623599.2020.1745134
[2] Ayodele E and Alabi O 2011 Abandonment of construction projects in Nigeria: causes and effects. J. Emerg Trends Econ Manag Sci. 2 (2) pp 142–145
[3] Bidzhieva F 2015 Features of construction as a branch of the economy J. Economics 4(5) Available at: https://scienceproblems.ru/osobennosti-stroitelstva-kak-otrasli-ekonomiki/1.html
[4] Drive Performance Across the Project and Asset Lifecycle. Available at: https://www.oracle.com/industries/construction-engineering/
[5] Goncharenko D, Menejlyuk I 2019 Determination of indicators of civil engineering in Odessa at variant organizational and technological designing J. Nauchnyj vestnik stroitelstva. 2(96) pp 197-203
[6] Gutnov A, Glazychev V 2000 The world of architecture (Moskow, Molodaya gvardiya) p 351
[7] Hautala K, Järvenpää M, Pulkkinen P 2017 Digitalization transforms the construction sector throughout asset’s life-cycle from design to operation and maintenance J. Stahlbau 86 pp 340-345
[8] Integrated project management system Spider Project. Available at: http://www.spiderproject.com/ru/
[9] Introducing Project - a simple, powerful and innovative solution for everyone. Available at: https://www.microsoft.com/uk-ua/microsoft-365/project/project-management-software
[10] Liu R and Chua V 2016 Theoretical Digitalization of Information Flow in the Construction Supply Chain. J. International Journal of Management Research and Business Strategy. 5 Available at: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.741.8448&rep=rep1&type=pdf
[11] Official site YouControl. Available at: https://youcontrol.com.ua/.
[12] Petrishenko N, Serogina N 2018 Modern technologies in the activity of hotel and restaurant business enterprises J. Naukovo-virobnych zhurnal «Biznes-navigator». 6 (49) Available at: http://business-navigator.ks.ua/journals/2018/49_2018/27.pdf
[13] Tereshko E, Romanovich M, Rudskaya I 2021 Readiness of Regions for Digitalization of the Construction Complex. J. Open Innov. Technol. Mark. Complex. 7 2 Available at: https://doi.org/10.3390/joitmc7010002