## ЖАС ЗЕРТТЕУШІНІҢ МІНБЕСІ ТРИБУНА МОЛОДОГО ИССЛЕДОВАТЕЛЯ PLATFORM OF YOUNG RESEARCHER

IRSTI 06.52.17 UDC 658.5 JEL 01, 02

https://doi.org/10.46914/1562-2959-2023-1-4-334-345

#### K.Y. MENDIGALIYEV,\*1

PhD student. \*e-mail: mendigaliev@mail.ru ORCID ID: 0000-0001-8286-6980 L.G. STATSENKO,<sup>1</sup> PhD. e-mail: larissa.statsenko@unisa.edu.au

ORCID ID: 0000-0002-2671-3936 <sup>1</sup>Al-Farabi Kazakh National University, Almaty, Kazakhstan. <sup>2</sup>The University of South Australia, Adelaide, Australia

## PROJECT MANAGEMENT IN THE CONSTRUCTION INDUSTRY OF THE REPUBLIC OF KAZAKHSTAN: MATURITY LEVEL ANALYSIS

#### Abstract

If we consider the construction market as a type of economic activity, the market provides for the creation of objects, measures for their restoration. The project has goals, prerequisites for implementation and takes into account the individual characteristics of both the project and the construction site. The basis for effective and high-quality project implementation is an effective project management system. Currently, in the organizations of the construction industry, the most widespread project-oriented management approach. More and more construction organizations, in order to quickly and timely respond to emerging changes, come to the realization of the need to standardize project management processes. The purpose of the study is to analyze the level of maturity of construction companies in the Republic of Kazakhstan. For this, an adapted Berkeley model was used to assess the maturity of project management processes in construction projects was analyzed. In the article, depending on the tasks to be solved, methods of scientific abstraction, system analysis, comparative analysis, models of the project management maturity model, combined with the processes of the PMBOK international project management standard, to assess the maturity of project management in the construction of the project management in the construction approach.

Key words: project management, maturity level, construction industry, models of the project management maturity level, PMBOK

#### Introduction

Today, project management is becoming widespread in various fields of activity. The most striking project-oriented approach is used in the organizations of the construction industry. The construction

industry is the largest branch of the economy, which, along with mechanical engineering, provides conditions for the creation and accelerated renewal of fixed assets. It is one of the key and economically significant industries in Kazakhstan, and therefore projects implemented in this industry are often of national importance.

Effective project management is essential in various fields, including construction, information technology, healthcare, manufacturing, and many others. It helps organizations achieve their objectives efficiently, manage resources effectively, and adapt to changing circumstances.

The development of the modern economy today contributes to increased competition between companies in the construction industry, operating in conditions of constant dynamic changes in the external environment. In this regard, more and more construction organizations build their activities based on project management. This allows them to be more flexible, set clear goals and achieve them, increases the transparency of all activities of the organization and increases the degree of involvement of project participants in the process, since everyone has a personal interest in the successful completion of the project [1]. All this in these conditions contributes to the formation of a competitive advantage for a particular construction organization.

In the construction industry, project management often involves collaboration among various stakeholders, including contractors, subcontractors, architects, engineers, regulatory authorities, and project owners. Effective communication, documentation, and coordination are critical for successful project delivery. Project managers in construction need to be knowledgeable about industry-specific regulations, construction methods, and materials. They also must adapt to the unique challenges that arise in construction, such as weather conditions and site-specific complexities.

The construction industry is the second largest business (organization) industry in Kazakhstan: 58,291 (13% of all 440,407 organizations in Kazakhstan). Despite this, the number of businesses engaged in construction is two times less than organizations in trade, the first in terms of the number of organizations in the industry of Kazakhstan [2].

According to the General Classifier of Economic Activities (OKED), construction in Kazakhstan is divided into the construction of buildings and structures, civil engineering and specialized construction work, provided that they are carried out as part of the overall construction process, with further division by direction.

In turn, the volume of construction of residential buildings amounted to 650.2 billion tenge, and industrial facilities 579 billion tenge [3].

Indicators	2017	2018	2019	2020	2021	2022	
GDP, in USD	137,28	159,4	170,54	181,67	163,23	197,1	
The volume of construction work performed, million tenge	3 258 031	3 509 296	3 862 995	4 431 666	4 934 069	5 470 714,2	
The share of construction in the GDP of the Republic of Kazakhstan in%	5,9	5,9	5,5	5,6	6,2	6,3	
Note: Compiled by the authors based on sourse [4].							

Table 1 – The share of construction in the total volume of GDP of the Republic of Kazakhstan for 2017–2022

The macroeconomic situation, which is stabilizing due to moderate real GDP growth, will have some impact on the construction sector in Kazakhstan. The volume of completed construction works demonstrates positive dynamics in nominal terms. It should be noted that during the pandemic in Kazakhstan, 2021 was also positive for the construction of Kazakhstan. On average, for the period 2017–2020, the growth in the volume of construction work amounted to about 9.4%. In 2016–2020, for this period, the maximum increase was recorded at the end of 2019 13.9%. Compared to December 2021, in 2022, the index of business activity in construction, formed by the National Bank of Kazakhstan, in September of this year decreased from 50.21% to 46.25%. The volume of construction

and installation works in January–March 2023 compared to January-March 2022, it increased by 16.4% and amounted to 605.3 billion tenge [4].

The construction market is an economic activity, the market creates events and construction projects for their reconstruction. The construction industry is a project activity, because each construction project is implemented in its own stages and has its own plan and schedule. It has its own goals, obligations, and whether it is a construction project or a project, it will have its own characteristics. If the project is managed effectively and correctly, it is a guarantee that it will remain a profitable project in the future.

Currently, companies and organizations are forced to compete in a highly complex and globalized environment, facing huge natural, economic and technological challenges every day.

Having identified the current problem, it is important to identify the root cause of the problem and find solutions so that the problem that has arisen is not recurring, but simply mitigating its impact. Thus, the processes at the enterprise are modernized, and this contributes to the achievement of the project goals.

The next method is to assess the maturity of the project in construction. Project management maturity assessment provides a complete picture of the application of project management processes and its level of maturity. Project management is a dynamic discipline that plays a critical role in successfully delivering projects across various industries and sectors. Effective project management skills are highly valuable for ensuring that projects are completed on time, within budget, and to the desired quality standards.

The main problems/limitations of any project are commonly referred to as the project management triangle. The main task of project management is to achieve all the goals and objectives of the project, while respecting the biased constraints. Biased constraints are time, scope, and budget, while quality is what will be affected by the absence or abundance of constraints.

## Literature review

In the construction industry, Maturity Models are used to assess and improve the maturity of project management processes, construction practices, and overall organizational capabilities. These models provide a structured framework for evaluating an organization's current practices and identifying areas for improvement.

In the context of the construction industry, a Maturity Model is a structured framework used to assess and improve the maturity of construction processes, practices, and capabilities within an organization. This model helps construction companies evaluate their current state, identify areas for improvement, and guide their journey toward higher levels of maturity in various aspects of construction management.

It was only in the 1980s that PM methods began to develop in customer-oriented construction [5]. Today, project management is widely used in all areas of activity and sectors of the economy, including construction.

The term "construction project" means "a purposeful, time-limited undertaking aimed at creating a new building object, reconstructing, modernizing or repairing an existing building" [6]. Project management in construction is a field of activity during which clear goals of a construction project are defined and achieved. It takes into account the balance between the amount of work, resources (materials, people, money, energy, space, etc.), time, quality and risks.

According to a study by The Standish Group International, about 30% of ongoing projects in the field of information technology are recognized as successful [7]. According to J.K. Crawford, a low percentage of successful projects indicates the immaturity of project teams and project managers [8]. J.K. Crawford believes that in order to effectively and efficiently use project knowledge, tools and technologies at least from the PMBOK® Guide [9], project managers should conduct continuous project activities for ten years, that is, project managers, project teams, organizations should gradually and consistently develop and mature.

When managing a construction activity project, special attention should be paid to the following system of interrelated elements: land, buildings and real estate, human resources, licenses, technologies

and other structural elements on which the effectiveness of project management in construction depends [10]. All this causes the need for additional specific knowledge required in project management. In the international standard PRINCE2, the list of such knowledge is clearly indicated [11].

Thus, project management appeared in construction at the early stages of the formation of science and has its own specifics in terms of the conceptual base, the composition of the project participants, and the content of the life cycle phases [12]. However, not only the construction industry as a whole is characterized by its own unique composition of project management system elements, but each construction organization uses project management tools and methods in its own way. To assess differences in project management systems of specific organizations, project management maturity models are used [13].

In their study Zagorodnova E.P., Khvorostukhina O.V. proposed a unified algorithm for developing a project management standard for organizations in the construction industry. It is based on a combination of the specifics of the construction industry and models for assessing the level of maturity of project management, which determine the feasibility of developing a standard [14].

## Materials and methods

It is no secret that in order to effectively manage any projects, it is necessary to have a developed and mature project management system. The main indicators of development, or rather their positive changes in the construction industry, are often the result of impeccable project management implemented in the organization. Therefore, it is very important to study foreign experience in this matter in order to further adapt their practice, where there are specifications and external infrastructure conditions similar to those of the local market.

It is necessary to use project management standards at all stages of construction project management, as is customary in many mature foreign countries. Since the PMBOK standard itself plays the role of a guide for managing projects in the construction industry, which contains instructions for managing content, cost, risks, communications, quality, etc.

The application of this standard will allow you to track the management procedure from the beginning to the completion of a construction project, using the formation of performance indicators that are used in the analysis of the effectiveness of project implementation, quality level, productivity of the project team, optimization tasks of the project, the effectiveness of measures to manage other areas of project management knowledge, which together provides effective management, which is what the project team implies.

There are several project management maturity models. The score base is created using a multiplechoice survey across all knowledge areas and life cycle stages, the results of which are averaged to obtain an overall organizational maturity score.

I. Primary. The lack of accepted project management procedures affects the unpredictability of the management process, the weak definition of the scope of work in terms of cost, scope and content. In matters of management, there is an incompetence of top management and, consequently, the dependence of success on individual efforts.

II. Personal project planning. Presence of several informal performance management procedures. With partial adoption of project and management methods by managers, but without PM at the organizational level, success still depends on the initiative of managers.

III. Control. For the first time, management processes have been partially formalized, and the company is implementing a planning system at all levels. Project teams learn about management methodology and tools, and the organization promotes a structured and systematic approach to project management.

IV. Integration. Project management processes and all related information are fully documented and officially recognized.

V. "Improvement. Project management processes in the company are constantly being improved. Provides automatic collection of project management data to identify process weaknesses, analysis and quantification to identify opportunities for further improvement in project management processes. This level assumes the availability and use of tools for continuous improvement of project management processes. Such tools can be, for example, organizational structures, procedures and information technologies that allow auditing, monitoring and examination of projects.

To assess the maturity of project management in the field of domestic construction, in this article, a modified Berkeley project management maturity model was applied using the processes of the international standard PMBOK. According to the Berkeley model, domestic construction companies were divided into 5 levels of maturity, which describe the state of development of project management in the construction sector, problem areas and development directions.

The purpose of the Berkeley project management process maturity model and an associated assessment methodology is to help organizations and people accomplish higher and more sophisticated PM maturity by a systematic and incremental approach. It measures, locates, and compares an organization's current PM maturity level. The primary advantage of using this model and industries, whereas other maturity models have specific audiences like software development or new product development.

The study design for the assessment is shown in figure 1 below.

Thus, construction companies from different areas of the industry were selected in order to assess the intensity of the application of project management processes, reflecting the stage of maturity of the company. At the final stage, cases of construction companies with different levels of maturity were described in detail.



Figure 1 – Design for assessing the level of maturity of construction companies in the Republic of Kazakhstan

Note: Compiled by the authors.

In order to collect data for building an assessment model, a survey was conducted among project managers and managers of construction companies in the Republic of Kazakhstan. The sample consisted of companies involved in the following 3 areas of construction: building construction, civil engineering, specialized civil works. A detailed description of the sample structure is presented in table 2 (p. 339).

No.	Construction area	Number of companies	Average market share (as of 2022)		
1	Building	28	47%		
1.1	Development of construction projects	7	3%		
1.2	Construction of residential and non-residential buildings	21	44%		
2	Civil Engineering	14	15%		
2.1	Construction of roads and railways	7	4%		
2.2	Construction of engineering structures	4	3%		
2.3	Construction of other engineering structures	3	8%		
3	Specialized construction work	21	38%		
3.1	Finishing work	4	5%		
3.2	Other specialized construction works	5	9%		
3.3	Demolition of existing structures and site preparation for construction	4	1%		
3.4	Electrical, plumbing and other construction and installation works	8	23%		
	Total	63	100%		
Note:	Compiled by the authors.				

## Table 2 – Description of the study sample

The regional specificity of the sample lies in the concentration in megacities like Astana and Almaty due to the large volume of construction in these cities. A significant number of construction companies were involved from Shymkent, Karaganda and Mangistau regions. A detailed description of regional specifics is presented in table 3.

Table 3 – Number of construction enterprises in the sample by regions of the Republic of Kazakhstan

No.	Region	Building construction companies		Companies in civil engineering		Companies in specialized construction works	
		Qty	Answers	Qty	Answers	Qty	Answers
1	Astana city	5	10	3	9	3	4
2	Almaty city	9	21	5	12	6	10
3	Shymkent city	3	9	2	2	3	3
4	Karaganda region	3	7	1	3	2	3
5	Mangistau region	2	6	1	1	2	4
6	Atyrau region	1	2	2	2	1	2
7	Kyzylorda Region	1	4	-	-	2	5
8	Turkestan region	1	3	-	-	1	3
9	East Kazakhstan region	2	3	1	3	1	3
	Total	27	65	15	32	21	37

rote. Complied by the dution

## Main provisions

As a result of applying the adapted Berkeley model, an assessment of the maturity of project management in construction companies of the Republic of Kazakhstan was carried out, on the basis of which the intensity of the use of project management processes in construction projects was analyzed.

A high level of maturity was revealed in the companies «BI Group» and «BASIS-A» due to the presence of a project office. A low level of project management maturity is observed in small construction companies such as Aibyn Group and others, due to the lack of funds allocated for the maintenance of the project office. It was also found that domestic construction companies pay less attention to technical processes, such as quality management and project monitoring, which negatively affects the level of maturity.

## **Results and discussion**

According to the data presented in Table 2, the average market share of companies in the field of building construction is 47%, which indicates a large number of organizations involved in the construction of residential and non-residential buildings (44%), as well as in the development of construction projects (3%). Among companies in the field of specialized construction works, companies representing electrical, metalwork and other construction and installation works (23%) have a larger market share. Therefore, in order to truly reflect the state of maturity of project management in domestic construction companies, an appropriate number of companies from each field of construction was selected. The largest number of companies in the study sample belongs to the construction of residential and non-residential buildings, since the share of these companies in the domestic construction market is 44%.

According to the data from table 3, the city of Almaty is the leader in the total number of construction companies participating in the survey (20 companies). The cities of Astana (11 companies) and Shymkent (8 companies) are among the top three in terms of the number of companies and accepted answers from respondents. In general, 134 respondents took part in the study, which included owners and top managers of construction companies, heads and project managers.

Respondents participated in an online survey in which they assessed on a Likert scale (from 1 to 10) the intensity of using the project management process group according to the international PMBOK standard. The average value of the respondents' assessment for each process made it possible to distribute the companies into 5 levels of maturity. This assessment made it possible to distribute construction companies into 5 groups according to the level of project management maturity. A detailed description of the assessment is provided in table 4 below.

No.	Direction of activity	Total Qty	Level 1	Level 2	Level 3	Level 4	Level 5	
1	Building construction companies	27	11	7	5	3	1	
2	Companies in civil engineering	15	6	5	4	-	-	
3	Companies in specialized construction works	21	12	8	1	-	-	
Note: Compiled by the authors.								

Table 4 – Results of assessing the level of maturity of construction companies in the Republic of Kazakhstan

According to the data shown in table 4, only 1 company (BI Group) has reached the highest level of maturity in project management. Bazis-A has the 4th level of maturity, while Imstalcon is at the third level of maturity. 3 construction companies (K-Dorstroy, K7, Rams Kazakhstan) have level 2 maturity. All of them are involved in the construction of buildings. Most companies (27) are still at the first level of maturity, which indicates a weak development of project management in these companies.

A more detailed assessment and description of the characteristics of each level are presented in table 5.

Table 5 - The level of maturity of PM processes in the studied construction companies

No.	PM processes	Mean Likert value	Level 1 (0-2)	Level 2 (2-4)	Level 3 (4-6)	Level 4 (6-8)	Level 5 (8-10)
		(max 10)	Aibyn Group	K-Dorstroy	Imstalcon	Bazis-A	BI Group
1	Organizational						
1.1	Schedule planning	9	2	3.9	5.8	7.8	8.8
1.2	Communications management	9,7	1.2	2.1	5.4	7	8.1
1.3	Presence of a project office	7,1	1	3.1	4.9	7.9	9

2	Methodical						
2.1	Design of the project charter	9,2	1.2	2	4	7.1	7.2
2.2	Creating a Work Breakdown Structure (WBS)	8,9	1.4	2.3	4.1	6.9	8
3	Financial	- ,-					
3.1	Cost estimate	9,7	2.1	3.9	6	8	9
3.2	Procurement control	9,4	1.9	2.9	5.8	7.9	8.5
4	Personnel						
4.1	Human resource planning	7,8	2	3.7	5	7.3	8.7
4.2	Development of the project team	7,2	2	2.8	4.8	7.5	8.4
5	Технические						
5.1	Quality planning	7,8	1.7	2	4.1	6.9	8
5.2	Project monitoring and control	7,3	1.8	2.4	4	7	8.4
	P-value	0.0001	0.0001	0.001	0.005	0.0001	0.001
Note	Compiled by the author	S.	•	÷	*		*

Continuation of table 5

As presented in Table 5, each level of maturity corresponds to a certain scale, showing the level of intensity of use of project management processes. For example, BI Group, which has the highest level of maturity, has good indicators of financial (9 and 8.5) and personnel (8.7 and 8.4) processes. Aibyn Goup has maturity level 1, where organizational (1.2 and 1) and technical (1.8 and 1.7) processes are low.

BI Group today is a diversified holding, the structure of which is made up of divisions and directorates in various areas of construction, development and engineering. BI group consists of a number of companies like: BI Construction, BI Development, BI Engineering, BI Road Construction, BI Property.

The holding is guided by the best world practices of corporate governance, adhering to international standards of financial transparency, ethical business principles, team corporate spirit. It ranks 164th in the ranking of the largest construction companies in the world, with a turnover of more than \$1.4 billion. Headquarters in Nur-Sultan.

According to the results of 2015, BI Group was named the fastest growing company according to the business publication National Business], 15th place in the NB500 rating and 15th place in the list of the largest companies in Kazakhstan in the Expert Kazakhstan rating. In 2015, BI Group was awarded the national award for achievements in the field of quality the presidential award "Altyn Sapa".

The training programs for specialists should include the basic concepts, the entire spatial environment of the activities of the stages of project implementation, will provide an additional tool for the effective use of financial resources, implement projects on time and with high quality, and ultimately progressively form a full-fledged human habitat and life activity.

One of the leaders in the construction industry and the application of project management is BAZIS-A, which has a 4-level of maturity. The company operates in several major business areas: investment and development activities, design and construction, production of building materials, rental of construction equipment and operation of residential and office buildings. The company employs more than 8200 highly qualified employees of various specialties.

The BAZIS-A company has its own design institute BAZIS, which is the largest design organization in Kazakhstan and performs all types of design work. The design institute has more than 200 highly qualified employees of all specialties necessary for the design of buildings and structures of all levels of technical complexity.

Design Institute "BASIS" provides design services at all stages from the development of a preliminary design to the passage of state expertise and approval by the authorized bodies, including

architectural supervision of the construction progress. To date, the BAZIS design institute has implemented about 100 projects throughout Kazakhstan [15].

As part of the control functions and operational management of the project implementation using the Project Management System, the tasks of measuring, forecasting and evaluating the current situation in achieving results based on the analysis of discrepancies between planned and actual indicators are solved.

To date, all projects of Imstalcon JSC are implemented with the participation of the Project Management Group, which includes managerial and technical personnel.

The design company Imstalcon-Proekt LLP was established in 2005 on the basis of the SKPB (special design and design bureau) of Imstalcon JSC. The company has the necessary staff of engineering workers with higher technical education to carry out design work, as well as the necessary technical equipment, software and regulatory framework of the Republic of Kazakhstan and international standards.

To date, all projects of Imstalcon JSC are implemented with the participation of the Project Management Group, which includes managerial and technical personnel.

The design company Imstalcon-Proekt LLP was established in 2005 on the basis of the SKPB (special design and design bureau) of Imstalcon JSC. The company has the necessary staff of engineering workers with higher technical education to carry out design work, as well as the necessary technical equipment, software and regulatory framework of the Republic of Kazakhstan and international standards [16].

Construction is an essential element of the investment process. Reproductive and technological structures of investments, the duration of the investment process, the level of specific capital investments are factors that determine the efficiency of construction production, on the one hand. On the other hand, the methods of construction, its scale and pace of development largely determine the effectiveness of investments in construction-related sectors of the economy. The process of construction production is characterized, first of all, by the duration of the work performed. The duration of production processes in modern construction megaprojects, due to the complexity and large volumes of work performed, has a significant impact on the economic performance of construction organizations.

In general, as the results of the analysis showed, more than 70% of domestic construction companies are at the lowest levels of maturity (1–2), and the transition from low levels of project management maturity to the highest (from 3 to 5) in the studied construction companies is hindered by the lack of project offices in many of them, the lack of highly qualified and certified specialists in the field of PM, the lack of a planned budget for the implementation of project management tools, ignorance of generally accepted PM standards, etc.

## Conclusion

The effective use of a project management system depends on many factors that need to be given special attention, in particular the process of project development, implementation, and only after that scaling the solution to evaluate and analyze the effectiveness of the project.

In order to accurately evaluate and effectively use a project management system, a broad aspect of the criteria needs to be considered. There are many approaches and methods for evaluating the effectiveness of using the project management system (Project Management Value), which are based on the experience and methodology of different organizations, collected for use in various sectors of the business [17].

One of the methods for evaluating project management is the project management maturity assessment, which provides a complete picture of the application of project management processes and its level of maturity.

As a result of applying the adapted Berkeley model, an assessment of the maturity of project management in construction companies of the Republic of Kazakhstan was carried out, on the basis of which the intensity of the use of project management processes in construction projects was analyzed. A high level of maturity was revealed in the companies "BI Group" and "BASIS-A" due to the presence of a project office. A low level of project management maturity is observed in small construction companies such as Aibyn Group and others, due to the lack of funds allocated for the maintenance of the project office. It was also found that domestic construction companies pay less attention to

technical processes, such as quality management and project monitoring, which negatively affects the level of maturity. Further evaluation will reveal the level of project management efficiency in the above construction companies and the role of having complementary teams.

As the results of the analysis showed, a high level of project management maturity in a construction organization contributes to an increase in the efficiency of project management. Each level of maturity has corresponding criteria and in order to move from one level to another, a number of recommended actions must be completed.

At the beginning of the project, the task is to create an effective team that can provide decent project management and obtain the desired results. In this regard, it is important to take into account the qualifications and personal characteristics of candidates. As for individual situations, sometimes there are complex projects in which they are divided into subprojects, respectively, several project teams are organized.

When creating complementary teams, it is worth considering that all members are highly qualified, performing various functions. For its formation, it is necessary to use sociometric approaches.

### REFERENCES

1 TechExpert IT-company // Quality of innovations. Project management advantages. URL: http:// it.techexpert.ua/consult/ corporatesystem/concept/advantages/Pages/Default.aspx (accessed: 15.03.2023)

2 Torgautov B., Zhanabayev A., Tleuken A., Turkyilmaz A., Mustafa M., Karaca F. Circular Economy: Challengesand Opportunities in the Construction Sector of Kazakhstan // Buildings. 2021, no. 11, p. 501. URL: https://doi.org/10.3390/ buildings11110501

3 Строительный сектор может обеспечить рост ВВП на уровне 4,5% в 2020 году. URL: https://wfin. kz/publikatsii/obzory/34852-stroitelnyj-sektor-mozhet-obespechit-rost-vvp-na-urovne-4-5-v-2020-godu.html (дата обращения: 15.03.2023)

4 Gross domestic product by production method. 2022. URL: https://stat.gov.kz/ru/industries/economy/ national-accounts/publications/4956/

5 Управление услугами и проектами в IT // Управление проектами. URL: http://www.smlogic.ru

6 Tishhenko L.V. Problems of development project management. URL: http://conf.sfu-kras.ru/sites/mn2012/thesis/s005/s005-049.pdf (accessed: 10.03.2023)

7 The CHAOS Manifesto: Value versus Success & the Orthogonals. Standish Group International. URL: https://www.standishgroup.com/sample\_research\_files/CHAOSReport2014.pdf (accessed: 10.03.2023)

8 Crawford K.J. Project Management Maturity Model. New-York: Auerbach Publications, 2007.

9 A Guide to the Project Management Body of Knowledge. Guide 6th edition (PMBOK-6). Newtown Square: Project Management Institute, 2017.

10 Piovesan R., Tesser E., Maritan L., Zaccariello G., Mazzoli C., Antonelli F. Mapping of stones and their deterioration forms. Clock Tower, Venice (Italy), 2023. Heritage Science, no. 11(1), p. 108.

11 Малахов В.И. Современные технологии управления проектами в строительстве // Экономика. – 2018. – № 1. – С. 10–11.

12 Osei-Kyei R., Narbaev T., Ampratwum G. A Scientometric Analysis of Studies on Risk Management in Construction Projects // Buildings. 2022, no. 12(9), p. 1342.

13 Chilakamarri S. Popular films for discussion of individual values in construction project management // Project Leadership and Society. 2023. Vol. 4. P. 100082. URL: https://doi.org/10.1016/j.plas.2023.100082.

14 Загороднова Е., Хворостухина О. Оценка уровня зрелости проектного управления при регламентации его процессов в организациях строительной отрасли // Art Administrandi. Искусство управления. – 2015. – № 3. – С. 76–90.

15 Official site BAZIS. URL: https://bazis.kz/ (accessed: 15.03.2023)

16 Official site Imstalcon JSC. URL: https://imstalcon.kz/ (accessed: 10.03.2023)

17 Makulova A., Saparbayev A., Zhuman Y., Abdibekov S., Madiyarova K., Bekbulatova R. Application of the TRIZ: Methodology in the Construction Industry // Civil Engineering and Architecture. 2023, no. 11(1), pp. 517–524.

### REFERENCES

1 TechExpert IT-company // Quality of innovations. Project management advantages. URL: http:// it.techexpert.ua/consult/ corporatesystem/concept/advantages/Pages/Default.aspx (accessed: 15.03.2023)

2 Torgautov B., Zhanabayev A., Tleuken A., Turkyilmaz A., Mustafa M., Karaca F. (2021) Circular Economy: Challengesand Opportunities in the Construction Sector of Kazakhstan // Buildings, no. 11, p. 501. URL: https://doi.org/10.3390/ buildings11110501. (In English).

3 Stroitel'nyj sektor mozhet obespechit' rost VVP na urovne 4,5% v 2020 godu. URL: https://wfin.kz/ publikatsii/obzory/34852-stroitelnyj-sektor-mozhet-obespechit-rost-vvp-na-urovne-4-5-v-2020-godu.html (accessed: 15.03.2023). (In Russian).

4 Gross domestic product by production method. 2022. URL: https://stat.gov.kz/ru/industries/economy/ national-accounts/publications/4956/. (In English).

5 Upravlenie uslugami i proektami v IT // Upravlenie proektami. URL: http://www.smlogic.ru. (In Russian).

6 Tishhenko L.V. Problems of development project management. URL: http://conf.sfu-kras.ru/sites/mn2012/thesis/s005/s005-049.pdf (accessed: 10.03.2023). (In English).

7 The CHAOS Manifesto: Value versus Success & the Orthogonals. Standish Group International. URL: https://www.standishgroup.com/sample\_research\_files/CHAOSReport2014.pdf (accessed: 10.03.2023). (In English).

8 Crawford K.J. (2007) Project Management Maturity Model. New-York: Auerbach Publications. (In English).

9 A Guide to the Project Management Body of Knowledge. Guide 6th edition (PMBOK-6). Newtown Square: Project Management Institute, 2017. (In English).

10 Piovesan R., Tesser E., Maritan L., Zaccariello G., Mazzoli C., Antonelli F. (2023) Mapping of stones and their deterioration forms. Clock Tower, Venice (Italy). Heritage Science, no. 11(1), p. 108. (In English).

11 Malahov V.I. (2018) Sovremennye tekhnologii upravleniya proektami v stroitel'stve // Ekonomika. No. 1. P. 10–11. (In Russian).

12 Osei-Kyei R., Narbaev T., Ampratwum G. (2022) A Scientometric Analysis of Studies on Risk Management in Construction Projects // Buildings, no. 12(9), p. 1342. (In English).

13 Chilakamarri S. (2023) Popular films for discussion of individual values in construction project management // Project Leadership and Society. Vol. 4. P. 100082. URL: https://doi.org/10.1016/j. plas.2023.100082. (In English).

14 Zagorodnova E., Hvorostuhina O. (2015) Ocenka urovnya zrelosti proektnogo upravleniya pri reglamentacii ego processov v organizaciyah stroitel'noj otrasli // Art Administrandi. Iskusstvo upravleniya. No. 3. P. 76–90. (In Russian).

15 Official site BAZIS. URL: https://bazis.kz/ (accessed: 15.03.2023). (In English).

16 Official site Imstalcon JSC. URL: https://imstalcon.kz/ (accessed: 10.03.2023). (In English).

17 Makulova A., Saparbayev A., Zhuman Y., Abdibekov S., Madiyarova K., Bekbulatova R. (2023) Application of the TRIZ: Methodology in the Construction Industry // Civil Engineering and Architecture, no. 11(1), pp. 517–524. (In English).

### К.Е. МЕНДИГАЛИЕВ,\*1

докторант. \*e-mail: mendigaliev@mail.ru ORCID ID: 0000-0001-8286-6980 Л.Г. СТАЦЕНКО,<sup>2</sup>

PhD. e-mail: larissa.statsenko@unisa.edu.au ORCID ID: 0000-0002-2671-3936 <sup>1</sup>әл-Фараби атындағы Қазақ ұлттық университеті, Алматы қ., Қазақстан <sup>2</sup>Оңтүстік Австралия университеті, Аделаида қ., Австралия

## ҚАЗАҚСТАН РЕСПУБЛИКАСЫНЫҢ ҚҰРЫЛЫС ИНДУСТРИЯСЫНДАҒЫ ЖОБАЛАРДЫ БАСҚАРУ: ЖЕТІЛУ ДЕҢГЕЙІН ТАЛДАУ

#### Аңдатпа

Құрылыс нарығын шаруашылық қызметтің бір түрі ретінде алсақ, нарық объектілерді құруды, оларды қалпына келтіру шараларын қарастырады. Жобаның мақсаттары, іске асырудың алғы шарттары бар және жобаның да, құрылыс алаңының да жеке ерекшеліктерін ескереді. Жобаны тиімді және сапалы жүзеге асырудың негізі – жобаны басқарудың тиімді жүйесі. Қазіргі уақытта құрылыс индустриясының ұйымдарында басқарудың жобалық-бағдарлы тәсілі кең тараған. Көптеген құрылыс ұйымдары пайда болған өзгерістерге тез және уақтылы әрекет ету үшін жобаларды басқару процестерін стандарттау қажеттілігін түсініп жатыр. Зерттеудің мақсаты – Қазақстан Республикасындағы құрылыс компанияларының жетілу деңгейін талдау. Ол үшін Қазақстан Республикасының құрылыс компанияларындағы жобалық менеджменттің жетілгендігін бағалау үшін бейімделген Беркли моделі қолданылды, оның негізінде құрылыс жобаларында жобаны басқару процестерін қолдану қарқындылығы талданды. Мақалада шешілетін міндеттерге байланысты ғылыми абстракция әдістері, жүйелік талдау, салыстырмалы талдау, жобаны басқарудың жетілу деңгейінің үлгілері, сандық сауалнама әдісі және т.б. қолданылды. Зерттеудің жаңалығы мен нәтижесі – Қазақстан Республикасының құрылыс саласындағы жобаларды басқарудың жетілуін бағалау үшін РМВОК жобалық менеджменттің халықаралық стандартының процестерімен біріктірілген Беркли жобаларын басқарудың жетілуінің бейімделген моделі.

**Тірек сөздер:** экономикалық қызмет, құрылыс индустриясы, жобалық-бағдарлы тәсіл, жобаларды басқару, жетілу деңгейі, жетілу деңгейінің модельдері, жобаларды басқару.

#### К.Е. МЕНДИГАЛИЕВ,\*<sup>1</sup>

докторант. \*e-mail: mendigaliev@mail.ru ORCID ID: 0000-0001-8286-6980 Л.Г. СТАЦЕНКО,<sup>1</sup> PhD.

e-mail: larissa.statsenko@unisa.edu.au ORCID ID: 0000-0002-2671-3936 <sup>1</sup>Казахский национальный университет им. аль-Фараби, г. Алматы, Казахстан <sup>2</sup>Университет Южной Австралии, г. Аделаида, Австралия

# УПРАВЛЕНИЕ ПРОЕКТАМИ В СТРОИТЕЛЬНОЙ ОТРАСЛИ РЕСПУБЛИКИ КАЗАХСТАН: АНАЛИЗ УРОВНЯ ЗРЕЛОСТИ

#### Аннотация

Если рассматривать строительный рынок как вид экономической деятельности, рынок предусматривает создание объектов, мероприятия по их восстановлению. Проект имеет цели, предпосылки к реализации и учитывает индивидуальные особенности как проекта, так и объекта строительства. Основой эффективной и качественной реализации проектов является эффективная система управления проектами. В настоящее время в организациях строительной отрасли наибольшее распространение получил проектно-ориентированный подход к управлению. Все больше строительных организаций в целях быстрого и своевременного реагирования на возникающие изменения приходят к осознанию необходимости стандартизации процессов управления проектами. Цель исследования – проанализировать уровень зрелости строительных компаний в Республике Казахстан. Для этого использована адаптированная модель Беркли для оценки зрелости управления проектами в строительных компаниях Республики Казахстан, на основе которой была проанализирована интенсивность использования процессов управления проектами в строительной сфере. В статье в зависимости от решаемых задач использованы методы научной абстракции, системного анализа, сравнительного анализа, модели уровня зрелости управления проектами, количественный метод опроса и др. Новизной и результатом исследования является адаптированная модель зрелости управления проектами Беркли, комбинированная с процессами международного стандарта проектного менеджмента РМВОК для оценки зрелости управления проектами в строительной сфере Республики Казахстан.

**Ключевые слова:** экономическая деятельность, строительная отрасль, проектно-ориентированный подход, управление проектами, уровень зрелости, модели уровня зрелости, управление проектами.