

ABSTRACT

of the dissertation “Evaluation of high-tech project success in the Republic of Kazakhstan based on international standards of project management”
submitted for the degree of Doctor of Philosophy (PhD)
specialty «6D051800 - Project management»
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General description of work. The dissertation research is dedicated to evaluating the success of high-tech projects in the Republic of Kazakhstan by using the PMBOK standard.

Relevance of the topic. In his Address to the Nation, the President of the Republic of Kazakhstan Kassym-Zhomart Tokayev noted that in order to support national business in international markets, it is necessary to develop new technological phenomena. Kazakhstan should become a platform for the development of the latest digital technologies and a brand as an open jurisdiction for technological partnerships. Moreover, according to the second reform of the Development Strategy of the Republic of Kazakhstan until 2050, entitled “Technological update and digitalization”, Kazakhstan seeks to be in the ranks of technologically competitive countries. For this, it is necessary to create an innovative infrastructure in the economic sphere based on knowledge, modernization of basic industries and the emergence of new markets. In addition, one of the key tasks of the State program of industrial and innovative development of the Republic of Kazakhstan for 2015-2019 is the creation of prerequisites for the emergence of a critical mass of innovative and active business. In turn, the implementation of high-tech projects can be an effective tool in solving the above problems, since the concept of creating high-tech projects is one of the main stages of the transition to an innovative economy.

Today, one of the important directions of state policy in the field of economic security is to increase competitiveness in the geopolitical space. The orientation of the economic system to the innovative component is one of the driving forces of socio-economic development, which forms the competitiveness of the national economy.

The domestic economy sectors that implement high-tech projects are key sectors for the sustainable growth of the economic system, which is carried out through the widespread introduction of leading technologies and the creation of products with high intellectual labor costs. In addition, high-tech projects are carried out on the basis of a number of tasks of the State Digital Kazakhstan programs adopted for 2018-2022. Successful implementation of high-tech projects will help to solve important problems in achieving one of the goals of the programs. The goal called the “Digital Existing Economy” is based on the use of a pragmatic start consisting of specific high-tech projects in the field of digital and technological restructuring.

According to literary sources, in the development environment of high-tech products, the percentage of unsuccessful startup projects ranges from 90% to 99%. Such projects do not fit into well-structured and internationally accepted project management methods due to the fact that they are distinguished by their complexity, increased risk, the unpredictability of results and high technology. In addition, studies have not yet been conducted on the topic of managing the success of high-tech projects in the Republic of Kazakhstan. Therefore, research in this area will remain relevant and highly significant.

Purpose and objectives of the study. The aim of the study is to evaluate the success of high-tech projects in the Republic of Kazakhstan based on project management standards.

In accordance with the goal, the following tasks were solved:

1) to systematize the theoretical and methodological aspects of managing high-tech project success;

2) to compare existing international standards for project management and their applicability in the management of high-tech projects;

3) to determine global trends and features of managing high-tech project success in foreign countries and consider ways of applying their practice in the Republic of Kazakhstan;

4) to analyze the infrastructure elements of the innovation system of the Republic of Kazakhstan affecting the implementation of high-tech projects;

5) to evaluate the level of success of high-tech projects in the Republic of Kazakhstan and show in this the role of project management processes based on the developed economic and mathematical model;

6) to suggest ways for improving the high-tech project success management in the Republic of Kazakhstan.

The object of the research is organizations that implement high-tech projects in the Republic of Kazakhstan.

The subject of the research is the interconnection of project management processes and the success dimensions of high-tech projects in the Republic of Kazakhstan.

Theoretical and methodological base of the research. The dissertation is based on research by foreign and domestic scientists and experts. The work uses regulatory acts of the Republic of Kazakhstan related to the formation and development of innovative infrastructure, as well as program documents and methodological developments of international experts and organizations. The dissertation research was carried out on the basis of system-structural and functional approaches.

In the course of the work, the following quantitative and qualitative methods were used: generalization, systematization, comparison, induction, deduction, abstraction, formalization, concretization, classification, statistical analysis,

qualitative and quantitative research, survey, economic and mathematical modeling, regression, dispersive and factor analysis.

The information base of the research. The information base was the data of the Statistics Committee of the Ministry of National Economy of the Republic of Kazakhstan; analytical reports of the National Agency for Technological Development, the Ministry of Investment and Development of the Republic of Kazakhstan, the World Bank, OECD, UN; materials of ISPC and foreign databases such as ScienceDirect, Springer, Ebscohost, Australian Library, Exeter Library, Elsevier, Taylor&Francis.

Scientific novelty. The scientific novelty of the dissertation research lies in the development of methodological approaches and practical recommendations for the management of high-tech projects in the Republic of Kazakhstan, ensuring their success. The following **scientific results** were obtained during the research:

1. The author's definition of high-tech projects has been developed and justified, in which industry features and the level of knowledge intensiveness are highlighted as specific features.
2. The author has developed and generalized an approach for high-tech project classification based on typology of high-tech industries suggested by international organizations, including industry and knowledge intensiveness characteristics as the main features.
3. Factors that lag behind the development of the infrastructure that affect high-tech project implementation in the Republic of Kazakhstan were identified.
4. The economic-mathematical model has been built for assessing the relationship between the success dimensions of high-tech projects and project management processes according to the PMBOK standard.
5. A quantitative assessment of high-tech project success was conducted, where the main variables are project management processes, the schedule and cost overruns, as well as the level of customer satisfaction.
6. New approaches and ways to improve the infrastructure in the framework of the implementation of high-tech projects in the Republic of Kazakhstan were proposed.
7. An algorithm of processes for managing the success of high-tech projects in the Republic of Kazakhstan has been developed.

The main provisions to be defended:

1. The author's definition of the term "high-tech project", which differs from the well-known interpretations by highlighting such attributes as the level of knowledge intensiveness and uncertainty, scope, time and other resources.
2. The author's classification of high-tech projects, based on typing by industry, containing 9 groups, and the level of knowledge intensiveness.
3. A quantitative assessment of the success of high-tech projects in the Republic of Kazakhstan based on the developed economic-mathematical model.

4. Regression analysis of the relationship between the success of high-tech projects in the Republic of Kazakhstan and project management processes in accordance with the PMBOK standard.

5. Recommendations for improving the management of high-tech project success in the Republic of Kazakhstan.

Theoretical and practical significance. The theoretical conclusions obtained during the study will contribute to the development of a holistic concept for managing high-tech projects in the Republic of Kazakhstan to create a knowledge-based economy. Also, the research findings will be able to make a significant contribution to enriching the science of project management.

Conclusions and suggestions of this study may be useful for stakeholders of the innovation system of the Republic of Kazakhstan. Systematic information on key elements of the high-tech industry infrastructure can be used by domestic market participants, in particular, business representatives.

Research results, scientific and practical recommendations can be taken into account when implementing, developing and improving strategies, programs, concepts and development plans of the Ministry of National Economy of the Republic of Kazakhstan and Ministry of Digital Development, Innovation and Aerospace Industry of the Republic of Kazakhstan. The materials contained in the research work can also be used in the following disciplines: "Project Management", "Management of Innovative Projects", "Innovation Management".

Approbation of the main results of the work. The main results of the thesis were presented in proceedings of foreign and local international conferences, such as the XIV International Scientific Conference of Young Scientists "Lomonosov-2018" (Kazakhstan); International Conference on Business and Economics (Vietnam, indexed by Web of Science); 58th International Conference for Young Scientists "Youth, Science and Practice" (Russia), etc.

The results of the dissertation work were used in other scientific researches:

- "Development of virtual electronic laboratories with elements of augmented and virtual reality technologies for studying physics in secondary educational institutions";

- "Obtaining nanomaterials by pulsed plasma spraying and their application in production", IRN № AP05130108;

- № 0298-17-GK, "Organization of small-scale production of energy-saving gas-discharge lamps with increased glow intensity based on new technologies";

The reference to the use of scientific conclusions and proposals in the project implementation processes is attached (Appendix A, Appendix B, Appendix C).

Publication of research results. The main provisions to be defended are reflected in 13 scientific works: 2 - in journals indexed in the Scopus database, 1 - in journal indexed in the Web of Science, 4 - in scientific journals recommended by CCSES MES RK, 6 - in proceedings of foreign and local international conferences.

The structure of the dissertation. The work consists of content, notation, abbreviations, introduction, three chapters, conclusion, references and appendixes.