

ABSTRACT

**of the dissertation work of Duiskenova Raigul Zheniskyzy
«Formation of priority directions for the development of regional socio-economic systems in the conditions of digital economy», submitted for the degree of Doctor of Philosophy (PhD) under specialty 6D050600 «Economy»**

Relevance of the research topic. At present, the digitalization of the economy is one of the most discussed aspects of the socio-economic process, encompassing various manifestations. At the core of the digital economy is the ability to use software tools to collect, process and deliver digital information in all economic activities of social relations. The digitalization of the modern economy is a pragmatic start, consisting of specific projects in the real sector, the launch of digitalization projects and the technological re-equipment of modern sectors of the economy, state structures and the development of digital infrastructure, as detailed in the state programme «Digital Kazakhstan».

The digitalization of the modern economy is a pragmatic start, consisting of specific projects in the real sector, the launch of digitalization projects and technological re-equipment of modern industries, state structures and the development of digital infrastructure, formulated in detail in the state programme «Digital Kazakhstan». In this digital economy, the main task is the correct formation of priorities for the development of regional socio-economic systems.

As indicated in the strategy of the President of the Republic of Kazakhstan N.A. Nazarbayev «Kazakhstan-2050» in the new political direction of an established state, the regional development program is a tool for the development of a new regional policy. Within its framework, it is necessary to create conditions for the sustainable development of regions based on the effective use of their socio-economic potential.

Regional development is a complex trend and its study will require multidimensional approaches, specific indicators. In this regard, in the conditions of the digital economy, it is necessary to form factors corresponding to regional development models in order to achieve technical and technological changes and a harmonious direction of socio-economic life. Kazakhstan will take measures aimed at leveling the levels of socio-economic development of the regions.

An analysis of the socio-economic situation of the regions shows that regional development continues to be marked by an imbalance that has been reflected to date. Moreover, with the current trend, regions are considered more likely to continue to prosper. The specific situation, reflecting the mechanism of development of the considered branches of the economy of the region, is directly related to socio-economic potential, which reflects the main relevance and characteristics in the digital environment. It is now important to consider the state of territorial concentration of enterprises based on one or more related industries and industrial clusters as factors for regional development. If we consider such data fully, we can see that digitalization is one of the great engines of the social and economic development of the regions.

Hence, regions must be able to take advantage of all the opportunities of the digital economy. In particular, it is important that digital technologies become a powerful engine for the entire industry, so that regions can use the full potential of the digital economy as a competitive advantage to attract investors and human capital, to properly form scientific and technical potential, to introduce new digital technologies at large regional enterprises initiating sectoral innovations, to increase the competitiveness of regions. All the above confirms the relevance of the topic of the dissertation research and defines its main purpose.

Degree of scientific study of the topic. Many foreign and domestic scientists contributed to the research in the course of socio-economic development of the regions: A.B.Temirova, U.A. Tekenov, O.A.Bakmenko, E.A.Vechkinzova, F.Bagova, E.V.Kizil, O.A.Lomovtseva, V.V.Vilken, J.A.Abylkasimova, M.M.Alibaeva, G.BAlina, S.K.Mizanbekova, I.P.Bogomolova, X.Wen, Z.H.Yang, I.A.Gurban, T.N.Yudina, R.Manapov, A.N.Dyrdonova, D.F.Rutko and others.

The works and researches of the mentioned authors elaborate on the stages and widely covered areas related to socio-economic development of regions, the impact of digital economy, competitive bases in the regions.

Despite the fact that several works related to the research of scientists and socio-economic development of regions have been formulated, the issues related to the analysis and comprehensive assessment of socio-economic development of regions are still relevant. The correct formation of priority directions of development of regional socio-economic systems under the conditions of digital economy can also serve as a great basis for this problem, which requires further in-depth study.

The purpose of the study is to develop theoretical and methodological recommendations for the development of regional socio-economic systems and the proper formation of priority areas in the digital economy.

In order to achieve this objective, the following tasks will need to be carried out:

- to study modern theoretical concepts of regional socio-economic systems development;

- to determine the factors of competitiveness of regional systems and socio-economic diversification of regions of Kazakhstan;

- to form an updated methodological basis in the Almaty region for a comprehensive analysis of the effectiveness and efficiency of innovative development of regional socio-economic systems in a digital economy and assess the directions of innovative development of socio-economic systems of the regions of Kazakhstan;

- to reveal the importance of improving innovation clusters in the development of regional socio-economic systems;

- implementation of economic-mathematical and conceptual model of management of regional innovation-production processes and regulation of socio-economic development of regions in a digital economy.

- the study of trends and development of proposals for the formation of the digital economic system of the socio-economic system of the regions of Kazakhstan.

Object of the study: Social and economic development of the regions of Kazakhstan in the digital economy.

Subject of the study: opportunities and risks of regional development, economic expertise at the national level, identification and assessment of regional problems and areas of their development caused by integration and digital transformation.

The theoretical and methodological basis of the thesis research are the works of Kazakhstani, foreign and Russian scientists who have studied and formulated the priority directions of socio-economic development of regions. Provides transparency of conclusions and proposals and serves as a methodological basis for the implementation of conceptual provisions: Message of the President of the Republic of Kazakhstan; State Program of Development of the Economy of Kazakhstan; State Program «Digital Kazakhstan», official data of the Committee on Statistics and regional bodies of the Ministry of National Economy of the Republic of Kazakhstan, National project «Technological breakthrough through digitalization, science and innovation», economic reviews of the Republic of Kazakhstan and developed countries, republican and regional programs, data of regional institutions and a collection of information in the periodical.

The working hypothesis of the dissertation research was based on the position of the researched scientific author, according to which methods of statistical analysis were applied according to periodicals of the National Bureau of Statistics of the Republic of Kazakhstan Agency for Strategic Planning and Reforms of measures directly related to the directions of socio-economic development of regions, focused on digital technology.

The scientific novelty of the thesis research consists in the formation of priority directions of development of socio-economic systems of the Republic of Kazakhstan and its regions in the conditions of digital economy, improvement of factors of competitiveness of regional systems. The research has achieved the following scientific results:

- the definitions for the development of the socio-economic system of the region in the digital economy have been clarified and substantiated;

- a number of methodological approaches to improving the socio-economic system of the region in the conditions of the digital economy in Kazakhstan have been identified and proposed;

- the factors of competitiveness of regional systems were analyzed, the socio-economic diversification of regions of Kazakhstan were defined;

- the results of innovative development of regional socio-economic systems in a digital economy were analyzed;

- proposals for improving innovation clusters related to the development of regional socio-economic systems were developed;

- an updated methodological framework for assessing the directions of innovative development of regional socio-economic systems was formed in the Almaty region;

- the economic-mathematical model of regulation of social and economic development of regions on digitalization of regions of Kazakhstan was developed;

- the tendencies of formation of socio-economic system of regions of Kazakhstan in the digital economic context were investigated, recommendations were elaborated.

The main concepts to be defended have been fully considered and studied, and the following provisions, prepared by the author, have been defended as a result of the research carried out:

- the author's definition of the development of the socio-economic system of the region in the digital economy has been given.

- a number of methodological approaches to improving the socio-economic system of the region in a digital economy in Kazakhstan have been proposed;

- the factors of competitiveness of regional systems were analyzed, and the socio-economic diversification of the regions of Kazakhstan was defined;

- the results of innovative development of regional socio-economic systems in a digital economy were analyzed;

- proposals for improving innovation clusters related to the development of regional socio-economic systems have been developed; an updated methodological framework for assessing the direction of innovation development of socio-economic systems of Almaty region has been formed;

- the economic-mathematical model of regulation of social and economic development of regions on digitalization of regions of Kazakhstan was developed;

- tendencies of formation of social and economic system of regions of Kazakhstan in the digital economic context were investigated; recommendations were elaborated.

Theoretical and practical significance of the thesis work. The main proposals and conclusions and findings can affect the factors of competitiveness of organizations, enterprises of the region in the development of socio-economic systems of regions in the digital economy of the country, and the approaches formulated in the thesis will improve innovation clusters in the development of regional socio-economic systems, which will detail the stages of forming an updated methodological framework to assess areas of innovation development.

Publication of the main results of the study. On the dissertation theme were published 14 scientific works, including 1 article in the Scopus information base, 5 articles in scientific editions, approved by the Committee on Regulation of Education and Science of the MES of the Republic of Kazakhstan, 8 articles in the proceedings of international scientific - practical conference.

Approbation of the research results. The main scientific outcomes and results of dissertation work, as well as recommendations were positively evaluated at regional and international scientific conferences, interuniversity scientific-practical seminars and conferences. The author's proposals on the topic of research have been published at international scientific and practical conferences, in which

the articles are presented: Canada «Features of the modern stage of regional development»; Belarus «Management process of socio-economic development of the region»; Turan University «Digital Kazakhstan» - Accelerated technological modernization of the economy", «Global science and innovations 2019: Central ASIA»; articles: «Major problems of regional development in the Republic of Kazakhstan», «Opportunities for digital transformation in the modern economy»; San-Francisco «Barriers to the digital economy and ways of alienating them»; Ankara, Turkey «The role of 'smart cities' in the formation of the digital economy of Kazakhstan».

In scientific journals: the article «Implementation of regional innovation policy» in the journal «Bulletin of the National Academy of Sciences of the Republic of Kazakhstan»; the article «Socio-economic development of regions of the Republic of Kazakhstan» in the journal «Problems of Agricultural Market»; the article «State regulation of regional development in Kazakhstan» in the journal «Statistics, accounting and audit»; the article «State regulation of regional development in Kazakhstan» in the journal «Bulletin of the National Academy of Engineering - Economic Systems» and in the National Academy reports were published.

The article «Factors of regional systems competitiveness» was published in the «Journal of Security and Sustainability Issues», Mukhamadiyeva et al; the article «Impact of Gender Equality on socio-economic development of Kazakhstan» was published in «Space and Culture».

Implementation of the research results. The results of the author's research were considered at scientific and methodological seminars of the department «Business and Management» of «MBU - Alikhan Bokeikhanov University», as well as it was implemented in the educational process of this university. It has also been used and implemented in the state institution «Entrepreneurship Department» of Zhambyl district of Almaty region (appendix to the report A).

Structure and scope of work. The dissertation work consists of an introduction, 3 chapters, a conclusion, a list of references and recommendations. The research work is illustrated with 50 pictures and 15 tables.

Conclusion. Theoretical and methodological recommendations on the development of regional socio-economic systems and the correct formation of priority areas in the digital economy have been developed.

The analysis of the socio-economic situation of the regions shows that there remains an imbalance in regional development, which to date has been significantly reflected. Moreover, with the current trend, regions are seen as more likely to prosper further. The specific situation reflecting the development mechanism of the considered regional economic sectors is directly related to the socio-economic potential, which gives a reflection of the main relevance and characteristic in the digital environment.

1. Modern theoretical concepts of regional socio-economic systems development are investigated; the author's concept is given. According to the author, regional development is considered as a rationale of the region, aimed at

sustainable recovery of economic potential, resources, economy, social potential, and sustainable development of regions is a set of socio-economic natural, social, environmental factors aimed at meeting the needs of the population and improving their conditions, as well as to increase the potential of regions. Factors determining the regional integrity, territorial boundaries and influencing the traditional regional direction of economic development are defined. The description methods and indicators for quantitative assessment of socio-economic heterogeneity are classified, the properties of socio-economic systems are considered. The general structure of national strategies of Kazakhstan is reflected, in accordance with the strategy it is supposed to work on the basis of all these plans and programs, especially the acceleration of regional development, increasing competitiveness in all sectors of the economy. Using its transit potential, Kazakhstan will be able to strengthen its information technology capacity and adapt the economy to the regional environment. One of the most important aspects considered globally in every state in the 21st century is achieving gender equality; in Kazakhstan's development direction this issue is also given close attention. Gender equality can become the basis of economic and social development of the country; in this connection the criteria defining gender gap have been demonstrated.

2. Factors of competitiveness of regional systems and socio-economic diversification of regions of Kazakhstan are defined by the author. The internal factor of competitiveness is an efficient use of investments, in relation to enterprises which are a prerequisite for maintaining competitiveness, investments for digital education are highlighted. In this respect, we used the national model proposed by M. Porter. According to this model, it is reasonable to study the role of regions in the formation of competitive advantages according to four interrelated areas formed by the "regional triplet / regional three", natural resources, capital, qualified specialists, infrastructure. As a result, the regional digital economy is formulated primarily as a system of economic relations built on regional digital platforms. The development of the digital ecosystem in Kazakhstan will primarily improve the quality of life of the population and the competitiveness of the economy. At the same time, it is necessary to create a modern regulatory framework for the implementation of digital technologies in order to promote human resources, intellectual and technological areas in the digital economy. It is necessary to support companies that are engaged in digital technology equipment. All information relating to the digital economy in the country should be kept under control.

3. Updated methodological base of Almaty region for comprehensive analysis of efficiency and effectiveness of innovation development of regional socio-economic systems in the conditions of digital economy and assessment of directions of innovation development of socio-economic systems of the regions has been formed. Based on the data on indicators of social and economic development, science and technology, a factor analysis of interrelated variable groups for 2011-2019 has been conducted. This analysis uses a smaller number of components to determine the initial variables, to find the main indicators of certain phenomena, and to effectively explain the information in complex indicators. To carry out a

comprehensive economic analysis of the effectiveness of regional innovation activities as a whole, specific values accumulated from the processing of available official statistical data are used. Besides, the presented statistical information is delayed for 1-2 years, which creates difficulties in choosing modernization priorities and forecasting the results of innovation and investment programs implementation. Since the conceptual model of management of regional innovation and production processes positively affects the development of the regions, the innovation processes of the regions can be defined by it. The innovation process as a system, which includes the sustainable development of socio-economic systems, must necessarily be manageable.

The conceptual model optimally forms the basis for the management of regional-innovation reproduction processes. The obtained result is a complete modernization of innovation activity, a change in the economy's ability to use innovation; promoting the stimulation of innovation systems in the direction of turning them into success. One of the methods capable of providing a complete and reliable analysis of the region's development in the digital economy is the scenario method, according to which we propose an algorithm for analyzing the region's innovative development potential. And we will define the region's innovation competitiveness by the rating method. There are 16 territorial units in the Republic, of which 14 regions and 2 independent units are considered: the cities of Astana and Almaty.

They are divided into six groups under the regional policy. The consolidation, which goes back to the concept of regional policy of the Republic of Kazakhstan, is based on the principle of complexity. This classification of regions is relevant in the present context. In the WEF Global Innovation Capability ranking for improvement, Kazakhstan is projected to be in 71st place in 2020, 67th place in 2021, and 63rd place in 2022. Investment in 2019 was KZT4.8bn, in 2020 KZT15.2bn, in 2021 KZT35.9bn and in 2022 KZT67.0bn was projected to be raised. Overall, government support for start-ups can be effective, with a focus on systemic measures, including attracting foreign entrepreneurs and supporting investors.

4. The importance of improving innovation clusters in the development of regional socio-economic systems has been revealed; in order to expand external relations and interaction, the formation of regional and interregional innovation clusters will contribute to strengthening the links between regional and sectoral innovation systems as a promising tool for the development of cooperation of subjects of the innovation sphere.

As a result of systematization of approaches to assessing the effectiveness of the clusters proposed a methodology for assessing the effectiveness of the regional innovation cluster, and the distinctive feature of the cluster is recognized the economic effect of industries related to the socio-economic position of the subject - on innovation and investment activity, taking into account its own parameters of human capital and regional interaction.

In order to achieve regional specialization as soon as possible, Kazakhstan has adopted a cluster approach. On the basis of this approach, several territorial

clusters specializing in narrow sectors of Kazakhstan's economy are defined. The development phase of the proposed methodology is largely based on obtaining feedback and monitoring the performance of the innovation cluster. Currently, there are 13 special economic zones and 31 industrial zones in Kazakhstan. Nevertheless, the pandemic has traditionally been one of the driving forces behind the acceleration of innovation development in the country and has slowed down information interaction and created many obstacles. Nevertheless, action towards NTAs (ACT) will help improve recovery measures and consider measures related to the country's sustainable development.

5. An economic-mathematical model for the regulation of socio-economic development of the regions of Kazakhstan on the digitalization of the regions of Kazakhstan was developed. The programme STATISTICA 10 was used to analyze the socio-economic situation of the regions of Kazakhstan. The names of 15 regions (cities) were taken as a variable, and the indicators of the five factors were calculated by STATISTICA system X1, X2, X3, X4, X5. In this regard, a Dendrogram in the statistics software was developed to compare levels of economic and social development using the «nearest neighbour method». This picture shows the regions whose economic and social levels are close to each other. Using this data, average values were found, an algorithm for dividing into two groups was developed, and the result in the Statistical program for calculating the average value of each factor was given.

According to the covariance matrix, the covariance calculation formula for the x-th number was determined where i, j-the number of factors, n-the number of objects in groups, the price vector of the discriminant function was determined: S^{-1} the inverse function. Thus, the sum of the average value of the covariance indicator and the average value of the discriminant function values is determined, calculations are performed in Excel. As a result of the research conducted in the course of the digital economy, criteria for assessing socio-economic efficiency based on five main factors have been formed. To compile and calculate the indices, the rating strategies of the country were used, taking into account the peculiarities of the competitiveness of the regions. A scheme for finding the threshold values of the results of the integrated assessment of the sustainable socio-economic development of the region has been developed and it has been shown that this analysis allows us to determine the rating of regions by the level of socio-economic development. The SWOT analysis conducted on the basis of an in-depth analysis of the most important aspects of digitalization shows that in order to understand the prospects of the digital economy, as well as its versatility, it can be used at different levels and at different facilities. Currently, SWOT analysis is widely used in various branches of economics and management.

6. Recommendations and a study of trends in the formation of the socio-economic system of the regions of Kazakhstan in the digital economic context were developed. Any regional policy regulating the socio-economic development of regions is based on a particular model. The effectiveness of implementation depends on the choice of the theoretical basis of regional policy. Consequently, economic growth rates are stabilized, the rational use of resources on the territory,

the level of socio-economic development of the regions of the country is regulated, and the quality of life is improved. In this regard, the study and adaptation of regional theories to the conditions of independent Kazakhstan and their use in solving applied problems of sustainable development of the regions deserve special attention.

At the same time, modern development trends and the urgency of emerging problems require not only constant monitoring of regional development, but also the application of modern methods of analysis to adequately assess the available features of development of the regions of the Republic of Kazakhstan and problem points.