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**MANAGEMENT OF THE DEVELOPMENT
OF THE INNOVATION ENVIRONMENT
OF THE MONOTOWN**

Management of the innovation environment of a monotown is a multilevel, complex task, for the realization of which it is necessary to know the patterns of the progress of certain innovative processes, the basics of managing innovation development at the micro, meso and macro levels. Currently, the methodological and methodological aspects of managing the innovation environment of the monotown have not been sufficiently explored, the relationships between enterprises and local authorities have not been established or regulated in the course of implementing programs and strategies for innovative development of monotowns. In particular, the issues of the organization of effective innovation activity within the monotown, the construction of a management system for the innovation environment of the monotown, the approaches, principles and factors determining the formation and development of the innovation environment are still not discussed. The theoretical aspects of managing the innovation environment of a monotown are considered, the directions of their development and improvement are substantiated. Particular attention is paid to the study of the features of the innovation environment of the monotown, in the development of methodological and practical recommendations for managing the innovation environment of the monotown. The foreign experience in the development of monotowns was studied. A review of the concept of «monotowns» was conducted, based on this, the authors revealed the features of the single-industry city in the innovative economy. The notion of «innovation environment of monotown» is specified, characterizing the interaction of institutional and economic subsystems, characterized by a systemic nature of innovation reproduction based on the implementation of innovative development mechanisms.

Key words: monotown, innovative monotown environment.

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Моноқалалардың инновациялық ортасын дамытуды басқару

Моноқалалардың инновациялық ортасын басқару көп деңгейлі, күрделі міндет болып табылады, оны іске асыру микро-, мезо- және макродеңгейлерде инновациялық дамуды басқарудың негіздерін, инновациялық үдерістердің жүзеге асу заңдылықтарын білуді талап етеді. Қазіргі уақытта моноқаланың инновациялық ортасын басқарудың әдіснамалық және әдістемелік аспектілері жеткілікті зерттелмеген және моноқалаларды инновациялық дамыту

бағдарламалары мен стратегияларын жүзеге асыруда кәсіпорындар мен жергілікті билік органдары арасындағы қарым-қатынас орнатылмаған немесе реттелмеген. Атап айтқанда, моноқалада тиімді инновациялық қызметті ұйымдастыру, моноқаланың инновациялық ортасын басқару жүйесін құру мәселелері даулы болып қалуда, сонымен қатар инновациялық ортаны қалыптастыру мен дамытуды анықтайтын тәсілдер, принциптер мен факторлар қарастырылмаған. Мақалада моноқаланың инновациялық ортасын басқарудың теориялық аспектілері талқыланып, оларды дамыту және жетілдіру бағыттары негізделген. Моноқаланың инновациялық ортасының ерекшеліктерін зерттеуге, оны басқару бойынша әдістемелік және тәжірибелік ұсыныстар әзірлеуге ерекше көңіл бөлінген. Моноқалаларды дамытудағы шетелдік тәжірибе зерттелді. «Моноқала» ұғымына шолу жүргізілді, оның негізінде авторлар инновациялық экономикада моноқаланың ерекшеліктерін анықтады. Инновациялық даму тетіктерін іске асыру негізінде инновациялар жаңғыруының жүйелік сипатымен ерекшеленетін институционалдық және шаруашылық жүйелердің өзара әрекеттесуін сипаттайтын «моноқаланың инновациялық ортасы» ұғымы нақтыланды.

Түйін сөздер: моноқала, моноқаланың инновациялық ортасы.

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Управление развитием инновационной среды моногорода

Управление инновационной средой моногорода является многоуровневой, комплексной задачей, для реализации которой необходимо знание закономерностей протекания отдельных инновационных процессов, основ управления инновационным развитием на микро-, мезо- и макроуровнях. В настоящее время методологические и методические аспекты управления инновационной средой моногорода недостаточно исследованы, не установлены и не регламентированы взаимоотношения предприятий и органов местной власти в ходе реализации программ и стратегий инновационного развития моногородов. В частности, продолжают оставаться дискуссионными вопросы организации эффективной инновационной деятельности в рамках моногорода, построения системы управления инновационной средой моногорода, не рассмотрены подходы, принципы и факторы, определяющие формирование и развитие инновационной среды. В данной статье рассматриваются теоретические аспекты управления инновационной средой моногорода, обосновываются направления их развития и совершенствования. Особое внимание уделяется исследованию особенностей инновационной среды моногорода, разработке методических и практических рекомендаций по управлению инновационной средой моногорода. Изучен зарубежный опыт развития моногородов. Проведен обзор понятия «моногород», исходя из этого, авторами выявлены особенности функционирования моногорода в инновационной экономике. Уточнено понятие «инновационная среда моногорода», характеризующее взаимодействие институциональных и хозяйственных подсистем, отличающееся системным характером воспроизводства инноваций на основе реализации механизмов инновационного развития.

Ключевые слова: моногород, инновационная среда моногорода.

Introduction

In contemporary conditions, in connection with the accelerated dynamic development and globalization of the world economic space, the transformations in the field of production and economic activities of socio-economic systems should occur on the basis of innovation and innovation, including monotowns, since in an innovative economy, problems of their functioning, which leads to the emergence of a depressed state of

the economy and to crisis phenomena in the social sphere of the monotown. All this causes dysfunctional development of socio-industrial structures of city-forming enterprises, their interaction with institutional structures and other economic entities. There is a reduction in production capacity at large city-forming enterprises, causing a budget deficit of local government, a decline in employment and the growth of social tensions in monotowns. At the same time, in order to modernize and diversify production, increase the competitiveness, level and

quality of life of the population, it is necessary to create an innovative environment that meets modern challenges of the domestic and foreign markets. Therefore, the basis for the socio-economic growth of a single-industry town should be the effective management of the innovation environment.

However, at the present time, the methodological and methodological aspects of managing the innovation environment of the monotown have not been sufficiently explored, the relationships between enterprises and local authorities have not been established or regulated during the implementation of programs and strategies for innovative development of single-industry towns, there is no necessary information on the socio-economic priority of innovative investment projects, and The organizational mechanism for managing the innovation environment of a monotown and not to shape the tools for its implementation. All this determines the relevance of the study of the issues of managing the development of the innovation environment of the monotown.

Management of the innovation environment of a monotown is a multilevel, complex task, for the realization of which it is necessary to know the patterns of the progress of certain innovative processes, the basics of managing innovation development at the micro, meso and macro levels. Theoretical, methodological and methodological issues of innovation environment management, problems of innovation development of the economy, innovation policy, innovation activity and innovation process were investigated by domestic scientists: S.B. Abdygaparova, F.G. Alzhanova, U.B. Baymuratov, S.B. Baymuhanova, A.S. Gabdulina, F.M. Dnishev, R.Z. Zhaleleva, R.K. Kaziyeva, S.E. Nurakhmetova, R.K. Sagieva, O.S. Sabden, N.T. Sailaubekov, A.A. Taubayev and others.

At the same time, despite a significant number of publications on the functioning of monotowns and their development, not all aspects of managing the innovation environment of a monotowns have been studied in depth. In particular, the issues of the organization of effective innovation activity within the monotown, the construction of a management system for the innovation environment of the monotown, the approaches, principles and factors determining the formation and development of the innovation environment are still not discussed.

Methods

The methodological basis of the research is the publication of Russian and Russian authors, such as

I.V. Lipsits, E.A. Vigdorichik and A.A. Neshchadin (Lipsits et al., 2000) conduct an analytical study of the problem of city-forming enterprises and monotown on a national scale, I.D. Turgel (Turgel, 2010) emphasizes inertia of the development of mono-settlements, criteria are proposed for characterizing the local systems of monotowns. Characteristics of the system of monocities of Kazakhstan is considered in the works of L.L. Bozhko et al. (Bozhko et al., 2015: 16-26), N.K. Nurlanova (Nurlanova, 2014), the role of geography in the analysis of industrial development strategies within the spatial organization of a region (Wali, 2014), functional Zoning of the City/Village Area and Its Contribution to the Sustainable Development of Settlements (Zotic et al., 2010). A significant place in these scientific discussions is the question of approaches to the selection of the most relevant term for monotowns (mono-specialized, mono-profile, monofunctional cities, city companies, etc.).

Materials

In the sphere of forming tools for state support of monotowns in the post-soviet period, Kazakhstan took the path in the late 1990s.

From the very beginning, the support of monotowns was viewed as an element of a nationwide regional policy. A nationwide program for the development of monotowns for 2012-2020 was adopted, which included, among other things, the criteria for the allocation of monotowns. Over time, this program has lost its force. Subsequently, the Program for the Development of Regions until 2020 was approved. A special feature of the Program was the possibility of including in the list of monotowns, where the city-forming enterprises partially operate or suspended their activities, as well as the classification of monotowns in terms of development potential.

The formation of nationwide lists of monotowns of Kazakhstan was carried out taking into account.

1. Type of settlement. Only cities are included in the list of monotowns. A specialized development strategy was launched for rural settlements.

2. Spatial localization monopolize. In Kazakhstan, the share of residents living in monotowns, the undisputed leaders are the southern, Eastern and Central regions (South Kazakhstan, Almaty, East Kazakhstan and Karaganda region), the share in the number of monotowns, the central and northern regions (Karaganda, Kostanay and Pavlodar regions).

3. The number of mono-settlements of the Republic of Kazakhstan. The aggregate of

monotowns divided into approximately two equal groups – with a population of less than 50 thousand and 50 to 200 thousand people.

4. Industry structure. The predominant type in the Republic is a single-industry town, specialization of

which is associated with the mining industry (20 city). Specialization of one city is connected with chemical industry, another – with mechanical engineering and five – with metallurgy. The city of Kurchatov is the scientific-industrial center (Turgel et al., 2016).

Table 1 – Main city-forming enterprises in Kazakhstan, taking into account the industry structure (Resolution, 2014)

№	Functional type of cities	Industry structure	City name	Population on January 1. 2016, thousand people.	Potential of economic development
1	cities with the primary development of the extractive industry	coal mining	Abay, Saran, Shakhtinsk, Ekibastuz	28,5 43,9 38,7 134,1	average average average high
		oil and gas	Aksay, Kulsary, Zhanaozen	33,6 57,4 113,4	average average average
		mining of metal ores	Arkalyk, Balkhash, Zyryanovsk, Karazhal, Kentau, Lisakovsk, Ridder, Ore, Tekeli, Khromtau	29,7 71,9 37,1 9,2 67,1 36,8 49,7 116,0 31,3 25,5	low average average average average high high average high
		mining of other raw materials	Zhanatas, Karatau, Jitikara	21,9 28,8 35,1	low average average
2	cities with the primary development of manufacturing industry	chemical industry	Serebryansk	8,8	average
		machine building, metallurgical industry (gold), uranium production	Stepnogorsk	47,6	average
		metallurgical industry	Aksu, Zhezkazgan, Satpayev, Temirtau	43,2 86,4 61,6 178,4	high average average high
3	scientific-industrial center		Kurchatov	12,3	average

The state of the city-forming enterprise distinguishes:

– monotowns in which the town-forming enterprise operates (19 cities) – Abay, Aksay, Aksu, Balkhash, Zhanaozen, Zhezkazgan, Zhytikara, Zyryanovsk, Karazhal, Kulsary, Kurchatov, Lisakovsk, Ridder, Rudny, Satpayev, Temirtau, Khromtau, Shakhtinsk, Ekibastuz ;

– monotowns, in which the town-forming enterprise operates in part (5 cities) – Arkalyk, Zhanatas, Karatau, Saran, Stepnogorsk;

– monotowns, in which the city-forming enterprise does not function (3 cities) – Kentau, Serebryansk, Tekeli.

Monotowns of regional subordination do not have independent budgets and are financed by financing plans from district budgets. At the same time, the budgets of the districts are mostly subsidized.

According to the OECD urban policy for 2017, an assessment of the economic potential of the monotowns of Kazakhstan was carried out. The

criteria for the non-profitability of a monotown are given:

- The fall in the volume of production at the city-forming enterprise and the non-competitiveness of its products: a significant reduction in the volume of production in the town-forming enterprise over the past 10 years.

- The exhausted mineral and raw materials base: the availability of raw material reserves for 5-10 years or less (for cities with the primary development of the extractive industry).

- Constant outflow of the city's population (decline in population): negative dynamics of the balance of migration over the past 10 years (population decline is mainly due to highly skilled working-age population).

- Catastrophic depreciation of the social and engineering infrastructure: a high proportion of emergency housing.

- An unfavorable ecological situation: the location of the city's territory in the zone of ecological disaster and the presence of sources of pollution with a high excess of environmental standards.

- Incomes of the population: less than average regional indicators.

- Remoteness from major cities and major transport corridors (75 km or more and 1 hour availability): deadlock location of the monotown (lack of national roads and railways); the transport infrastructure that connects the monotown with other cities and regions is in a much worn condition.

«The Program for the Development of Regions to 2020» does not contain details on the exact methodology or weight of certain criteria. However, only two monotowns out of 27 (Zhanatas and Arkalyk) were assigned to a group with a low development potential. The rest are in groups with high or medium potential (OECD, 2017).

The main driving force of diversification of the economy of monotowns will be large, or «anchor», investment projects (usually associated with the chemical industry, oil and gas sector, mining industry and metallurgy), described in the Comprehensive development plan (CPR). The Program for the Development of Regions to 2020 and the individual CPR identified three other measures to restore the economic potential of monotowns:

- 1) implementation of investment projects by Kazakh state enterprises and state development banks (affiliated persons of JSC «Samruk-Kazyna» and National Managing Holding «Baiterek»);

- 2) placement of auxiliary enterprises and servicing enterprises by city-forming enterprises,

orders in single-industry towns, taking into account their specifics;

- 3) restoration of the former specialization in monotowns by attracting a strategic investor to modernize the existing specialization or to identify promising mineral deposits located near monotowns. And although there is no article in the republican budget devoted to investment projects in monotowns, a number of such projects have received preferential loans with state subsidization of interest rates (OECD, 2017).

The methodology for assessing the potential for the development of monotowns reasonably takes into account geographical variables (distance to large cities, the presence or absence of large motor roads and railways). As the experience of a number of countries in the OECD (Australia, Canada and the USA) in the area of economic development of monotowns (most often with a predominance of extractive industries), the size of a monotown is also important. Larger monotown use the effect of agglomeration economies and are more likely to resist the impact of the economic downturn in the dominant industry. In a review of the disappearing mining towns, Martinez-Fernandez and her team found (2012) that the most successful revival strategy was applied in Sudbury (the Canadian province of Ontario), a mining town with 157,000 inhabitants (which corresponds to Kazakhstan's largest single-industry towns) located about 400 kilometers from Toronto (the largest city in Canada).

As a result, the revision of the methodology for assessing the potential of monotowns development, the picture could become more realistic. This means the identification of a real number of monotowns with low potential (which is probably more than 2 out of 27).

More attention should be given to the issue of stimulating the mobility of labor resources living in monotowns with low development potential. Measures to maintain or stimulate economic activity in the former mining communities of the OECD countries did not always bear fruit, to be more exact, many times failed. In many cases, revival strategies, based on tourist attraction and the development of high technology / services, did not have a significant impact on the situation (Martinez-Fernandez et al., 2012). Increasing labor mobility, encouraging the voluntary relocation of monotowns with low development potential to more promising socio-economic settlements (for example, to large cities or urban agglomerations) may prove to be a more effective measure.

As the experience of the OECD shows, the development of entrepreneurship, especially of small and medium-sized enterprises, can contribute to the diversification of monotowns. In Australia, mining cities with a significant proportion of non-profit businesses (various shops for local residents or small businesses in the suburbs – for example, agri-food) have more successfully retained their population after the closure or reduction of production (Regional Australia Institute, 2013).

A number of former mining cities have achieved economic diversification through the development of tourism. For example, in the report of the Center for Business Information, Sociological and Marketing Research «Bisam Central Asia» (BISAM Central Asia, 2012) is cited as an example the town of Big Stone Gap, located in Appalachia (Virginia, USA), which was successfully converted into a center ecotourism by supporting entrepreneurs engaged in tourism (selling equipment for kayaking and rafting, hotel services and so on).

This allows us to conclude that small business in a non-existent sphere is a promising way to withstand the inevitable economic and demographic decline in cities with a predominant development in the extractive industry. Targeted support of small and medium-sized businesses (entrepreneurs training, subsidies for new enterprises) in monotowns can help consider the subjects of the private sector of alternative economic specialization (for example, niche tourism).

Another form of development of small and medium-sized businesses in monotowns is to help small and medium-sized businesses to unite and competitively contract with large enterprises in the extractive or manufacturing industries. Local small and medium enterprises are often too small to participate in tenders for large companies, including city-forming enterprises of their own cities. In addition, they often do not know the requirements of such companies for quality, product design and so on. In the Canadian province of British Columbia, this approach contributed to increasing the profitability of mining enterprises in mining towns and creating new opportunities for small and medium-sized businesses. More specifically, the Northern Development Initiative Trust (NDIT) has set up a special website for networking between suppliers (www.supplychainconnector.ca/), which helps small businesses in the region find each other and take part in contests. The Contractor / Supplier Boot Camp helps to establish links between small and medium-sized enterprises and large industrial enterprises, organizing training on the

wishes, requests and specific requirements of large companies (Federation of Canadian Municipalities, 2015).

The study of foreign experience in the development of single-industry towns is particularly relevant for the Republic of Kazakhstan.

The current stage in the formation of economic relations presupposes the restructuring of the economy of Kazakhstan to an innovative type of development. Sustainable economic development can be achieved through the formation of a favorable innovation environment, which will allow for the activation of innovative activities and the effective use of innovative capacity in order to increase competitiveness and accelerated socio-economic development. Given this, the need to manage the innovation environment is determined both by the factors of the external environment and by the internal needs of the socio-economic system that determine the achievement of balanced economic development. At the same time, the formation and development of the innovation environment of Kazakhstan as a whole largely depend on the innovative environment of territorially isolated units that have undoubted production and innovation potentials.

The OECD report (OECD, 2016) details the innovative system, as well as intellectual property and higher education systems. Within the framework of the project «Enhancing Competitiveness through Optimization of Innovative Policy» of the OECD Program on Enhancing the Competitiveness of the Countries of Eurasia, the territorial location of Kazakhstan's innovation system, especially those elements that are associated with the commercialization of innovations, has been studied.

In large cities, as a rule, the percentage of the educated (hence, productive) population is higher. Such concentration of human capital in several cities is an important prerequisite for the successful existence of the country's innovation system. The symbiotic relationship between human capital, creative activity and a favorable urban environment with a high standard of living, as a rule, attracts and retains the so-called «creative class».

Thus, the success of the national innovation system depends on a number of urban innovation systems, especially in Kazakhstan, which is characterized by a high degree of concentration of scientific research and mental workers. The formation of highly organized, prosperous urban agglomerations with good housing conditions, an acceptable level of traffic jams and «points of attraction» for innovative ideas (leading universities,

venture funds, developed financial infrastructure) is necessary to stimulate innovation development. As Yusuf noted, Kazakhstan could set itself the goal of turning one or, possibly, two cities into «centers of knowledge» of Central Asia (OECD, 2017).

At present, Kazakhstan is far from the world level of advanced technologies. Significant distances between cities, low population density in many parts of the country, vast rural areas and many small towns with relatively low quality of infrastructure serve as natural obstacles to the development of the innovative sector of industrial production. Human capital, as a rule, is concentrated in large cities (and there are few such in Kazakhstan). As the results of a study by E. Boulhol and his team (Boulhol et al., 2008) show, the efficiency and intensity of private R & D is significantly influenced by the degree of concentration of cities, but not by the distance from large markets, which sounds promising for Kazakhstan (subject to acceleration of urbanization).

Kazakhstan has made it a priority to stimulate innovation at the enterprise level and to attract transnational corporations to whom the role of «innovative flagships» is intended. The tasks of the «State Program of Industrial and Innovative Development of the Republic of Kazakhstan for 2015-2019», the logical continuation of the «State Program on Forced Industrial and Innovative Development of the Republic of Kazakhstan for 2010-2014», includes the formation of innovative clusters and diversification of the economy through development manufacturing industry. As part of the program, the National Agency for Technology Development is responsible for the distribution of innovative grants, including the acquisition of technology in the OECD and China, and the support of innovative projects (OECD, 2017).

The following basic methods are put into the methodological basis of the research: abstract-logical, complex-factorial, modeling.

Literature review

The result of economic reforms in the Soviet Union was the mono-profiling of many Russian cities. The essence of the phenomenon of mono-profile consists in a rigid relationship between the development of all spheres of the city's life and the financial situation of the city-forming enterprise of one technological chain.

Mono-profile city (monotown) is an industrial city with a single-industry production. The Greek prefix «mono» (from the Greek monos – one) is

the first part of complex words with the meaning «consisting of one, single, referring to one; single» (Zuykina et al., 2016).

When determining a monotown, it is necessary to dwell on the concept of a town-forming enterprise. This term first appeared in the Soviet era. The monotown was created according to the plan for the development of city-forming and town-planning enterprises. A city-forming enterprise is a production enterprise where a significant or even a major part of the able-bodied inhabitants of a city or a village is engaged, in connection with which it has a decisive influence on the employment of the population. Graduating enterprises work for the internal needs of the city – municipal and social and cultural services (passenger transport, electricity, heat and water supply, sewage, garbage collection, construction, trade, food industry, etc.) (Maslova, 2011).

At present, there is no single interpretation of the concept of «monotowns». The concept of city-forming enterprises is specified in the Decree of the Government of the Republic of Kazakhstan of June 28, 2014 No. 728 On approval of the Program for the Development of Regions until 2020 (with amendments and additions as of June 17, 2015). A monotown is defined as a city where the bulk (20% or more) of industrial production and the able-bodied population is concentrated on one or several (few) city-forming enterprises, usually of one profile and a resource orientation (monospecialization), which determine all economic and social processes taking place in the city. Also in the category of monotowns are cities with a population of 10 to 200 thousand people, characterized by one of the following criteria:

- the volume of industrial production of town-forming enterprises of the city in the main extractive sector is more than 20% of the city's total output (monospecialization);
- on city-forming enterprises of the city employ more than 20% of the total number of employed population;
- city, in which the city-forming enterprises partially work or suspended activities.

At the same time, many monotowns are administratively subordinated to suburban settlements and rural settlements, which are economically closely connected with the city (Resolution, 2015).

Russian sociologist A.N. Maslova (Maslova, 2011) starts from the local community and defines a monotowns as «a relatively isolated community of compact living people who are part of the macro

system, which is a special type of social organization, which is characterized by the systemic unity of the city and the city-forming enterprise and the monocentric nature of the economy associated with the implementation of a certain socially significant function in the macro system».

In Western Europe and the United States, emphasis is placed on finding the optimal model for managing a «shrinking» city, implementing the principle of (smart decline), assessing social consequences and the required social standards under controlled compression. The opposite of this approach is the experience of the People's Republic of China (PRC), where the problems of monotowns are solved within the framework of long-term «industrial revival» programs of large old industrial regions uniting several provinces, modernization of both city-forming enterprises and city centers of old industrial territories.

Thus, the monotown is a complex structure in which inseparably linked and synergies are the city and the city-forming enterprise, which has considerable potential for innovation, which is characterized by a set of resources required for the implementation of innovative activities: intellectual, material, financial, human resources, infrastructure and other. Accordingly, the peculiarities of the functioning monotown in an innovative economy, such as passivity development; concentration of monotowns within limited territories; lack of possibility to take into account a combination of favorable development factors; sharp polarization of the main elements of urban economic structure in combination with various expression of diversification and specialization; mismatch of the goals of the city and the city-forming enterprise; homogeneous professional population; significant dependence of the local budget on the activities of the city-forming enterprise.

Results and discussion

Taking this into account, in order to increase competitiveness, reduce social tensions in the labor market, create permanent jobs, develop small and medium-sized businesses, and increase the efficiency of local government, it is necessary to form and develop an innovation environment for the monotown, which is an integral part of regional and national innovation systems.

However, under the «innovative media company monotowns» means the totality of enterprises and organizations located on the territory of local self-government and engaged in direct activity on

the creation, commercialization and diffusion of innovation, as well as a set of organizations of the innovation infrastructure, organs of state (regional) administration and institutions that ensure the implementation of mechanisms of innovative development that meet both the characteristics of a single-industry city, and the requirements of a regional and national systems.

Given the economic, social, geographic features of a particular single-industry town, its innovation environment is characterized by a certain configuration of the main components of the elements, the appropriate forms and conditions for the interaction of functional blocks, external and internal factors affecting the innovative development of a single-industry town (Figure 1).

Internal factors of formation and development of the innovation environment of a single-industry city, both positive and negative impacts, are divided into the following types: production; organizational-economic, institutional.

At the same time, external factors play a significant role in shaping and developing the innovation environment of the monotown. Like the factors of the internal innovation environment, the factors of the external environment are interrelated. Under the interconnectedness of the factors of the external innovation environment is understood the level of force with which a change in one factor affects other factors. As established in the course of the study, the external innovation environment is characterized by the complexity (the number of factors that a mono-city must respond to), mobility (the speed with which changes in the environment occur), uncertainty (a function of the amount of information a monocity has about a particular factor, and function of confidence in this information).

Thus, under the management of the innovation environment of a single-industry city, it is proposed to understand the multidimensional and multidimensional, purposeful process of the impact of local self-government bodies on the innovation environment, based on a combination of interests, coordination of participants' activities and taking into account the degree of influence of various factors of positive and negative impact.

As the results of the research show, in the process of interaction of subsystems of the innovative environment of a monotown, there are institutional contradictions, which necessitates the formation of an innovative infrastructure that performs the function of reducing the risks of interaction and professional advancement of innovations to the market. Innovative infrastructure is the main tool

of the innovation economy and represents a set of interrelated, complementary production and technical systems, organizations, firms and the corresponding organizational and management systems necessary and sufficient for effective innovation and innovation. The structure of the innovation infrastructure includes: production and technological infrastructure; consulting infrastructure; infrastructure for training; information infrastructure; financial infrastructure; marketing infrastructure. At the same time, each component of the innovation infrastructure has a certain set of specific properties and characteristics.

The main directions of innovative development of the monotown are in direct connection with the specialization of the city, which has a significant impact on the efficiency of managing the innovation

environment of the single-industry town. Thus, according to the official data provided by the Working Group on the Modernization of Mono-cities under the Ministry of Regional Development of the Republic of Kazakhstan, there are 27 single-industry cities (32% of the total number of Kazakhstan cities), home to about 1,340,551 people (7.4% of the urban population countries in single-industry towns). Monotowns in unstable environmental conditions require qualitative transformations and transformations based on innovations in order to modernize traditional (city-forming) industries; diversification of the city's economy (creation of new industries and enterprises serving the population and business); development of small and medium business; improve the image of the city and improve the quality of life.

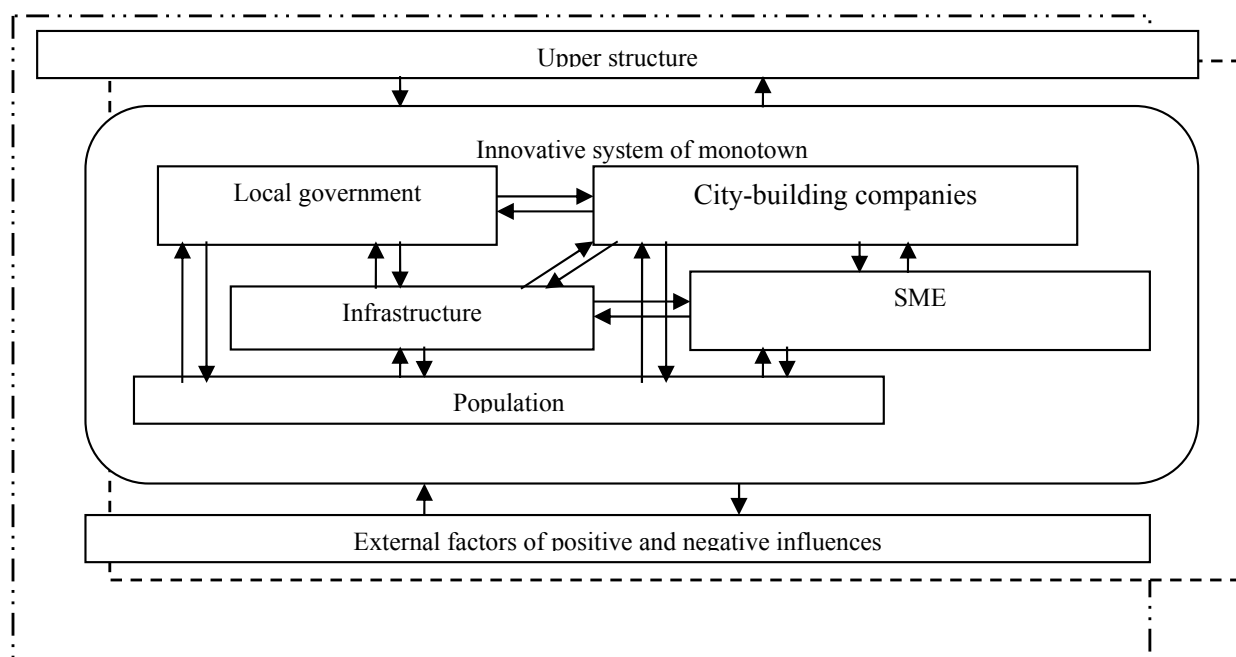


Figure 1 – Structure of innovative sphere of monotown
(compiled from sources (Lytkin, 2012))

In order to solve the existing problems of managing the innovation environment, a single-industry city is proposed to be implemented on the basis of a methodical approach. This approach is as follows:

1) the innovative development of a single-industry town is based on temporary irreversibility and is a positive difference between the current and the past state;

2) the innovative development of a monotown is based on the dynamism and unrepeatability of stages in the transformation of the innovation environment of a single-industry town;

3) management of the innovative environment of a monotown represents a positive transformation of its properties and qualitative characteristics when moving to a higher level of functioning;

4) management of the innovation environment of a single-industry city is a process of natural, inevitable, irreversible and necessary;

5) the essential characteristic of the management of the innovative environment of a single-industry town is the existence of a qualitative difference between the typical and necessary stages of organizational changes;

6) the integral nature of the innovative development of a single-industry city is determined by the cumulative effect, which is based on internal levers of self-movement of the innovation environment of a single-industry town, revealing its internal potential;

7) management of the innovation environment of the monotown is focused on the implementation of the mission, which involves the assessment and selection of the development criterion in accordance with the preferences and interests of counterparties of the innovation environment of the single-industry city, taking into account internal and external factors.

Given this, it is necessary to highlight the system-wide and socio-economic laws governing the innovative environment of a single-industry city. The general laws governing the management of the innovation environment of a single-industry city are the following: the law of necessary diversity, the law of specialization of management, the law of integration of management, the law of saving time, the law of synergy, the law of complement, the law of proportionality, the law of composition, the law of information-order, the law of development (ontogeny), law self-preservation. Within the framework of the study, the following social and economic laws are distinguished: the law of priority of social goals, which is based on the condition of maintaining the equilibrium and development of the innovation environment of a single-industry city by ensuring the achievement of the goal of constantly improving the level and quality of life of the population, which is the main source of increasing economic efficiency; the law of increasing subjectivity and intellectuality, which lies in the fact that intellectual capital plays a decisive role in the current conditions of management (Mysin, 1998).

Management of the innovation environment of the monotown is based on the subordination of innovative processes to unified laws, which is an objective prerequisite for the formation of mechanisms for the development and adoption of managerial decisions. In connection with this general laws in our opinion is: the interaction of part and whole,

hierarchical order, feasibility. The specific features include the following: the successive change of technological structures (cyclicality); technology as a universal form of innovation; a succession of generations of technologies based on movement along the logistic (S-shaped) curve; interrelation of innovative technologies with production of innovative type; integrity, conformity and balance of all technologically coupled links (components) in the production process; synchronization of the level of scientific and technological development and organizational and economic forms and production structures.

Thus, the idea of managing the innovation environment of a single-industry town as a regular and probabilistic process allows us to distinguish two of its results: technologies and products whose interdependence will determine the efficiency of the company and the competitiveness of a single-industry town. Through innovative products produced on the basis of innovative technologies, economic, and then social effects are formed. Simultaneously, this approach makes it possible to create a management system for the innovation environment in accordance with the stages of innovative development as a determinative factor. The interconnection of these processes causes the need to synchronize the level of innovative development and the organizational and economic forms of its provision.

A mono-city is viewed as an open complex system, including subsystems in a no equilibrium state, which is characterized by intensive multiple-discrete exchange of the results of its activity between subsystems, the system and the external environment. The innovative environment of a single-industry city has the direction of processes conditioned by the internal properties of its elements in their individual and collective manifestation. Individual manifests itself in the branch belonging to business entities, collective – in territorial unity.

Proceeding from this, when forming a management system for the innovation environment of a single-industry city, along with the system, program-target, innovative and logistical approaches, the territorial-branch approach is used. In the form of processes, regulated self-organization is proposed, which is expressed in the qualitative and quantitative symmetry of the relations between the elements of the innovation environment of a single-industry town, which is striving for self-reproduction; in mutually positive relations and relations between its elements with the strengthening of positive feedback and the transformation of mutually negative interactions into a synergetic effect in its real manifestations.

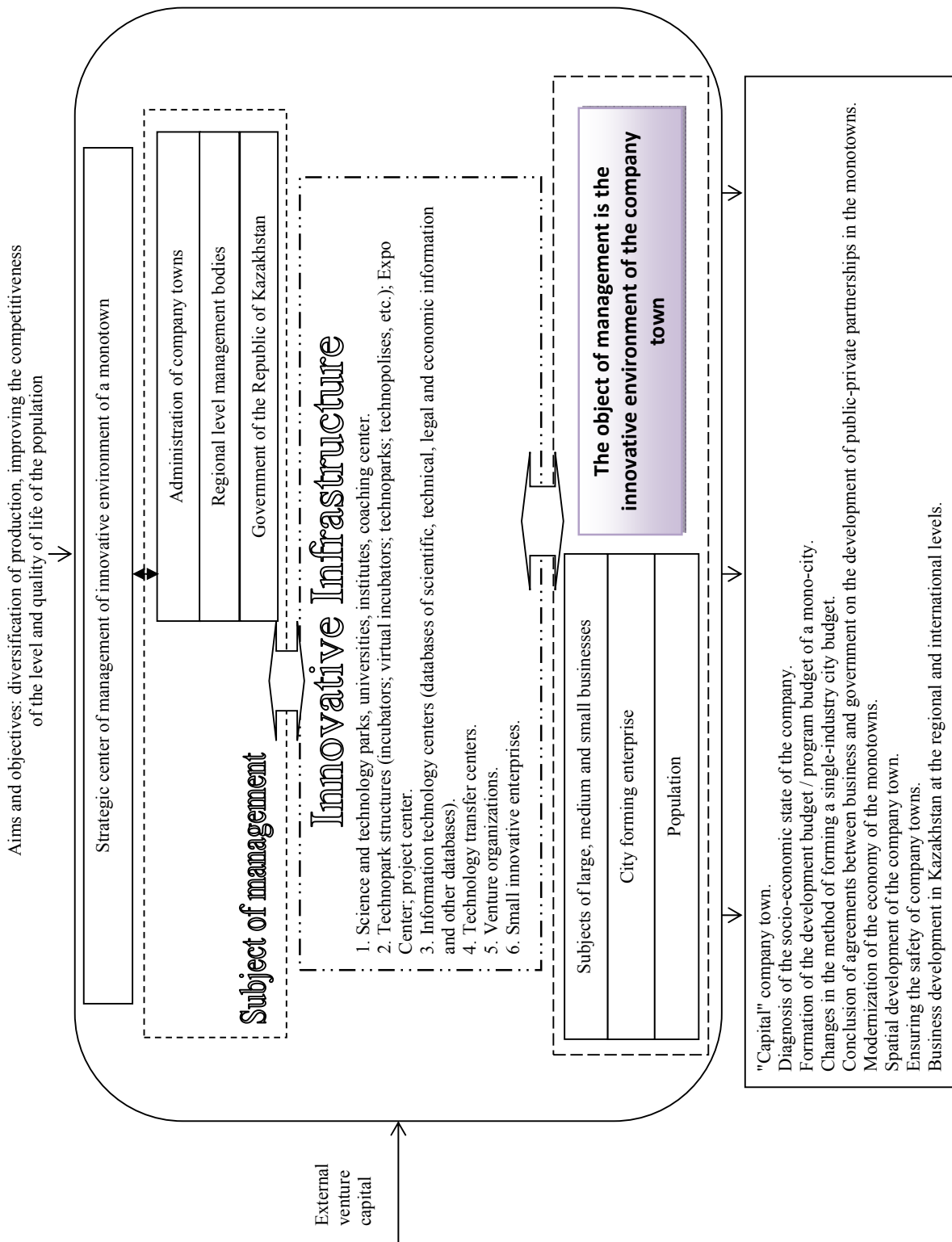


Figure 2 – Management model innovation environment monotown

The development of regular and systematic positive feedback helps business entities to establish horizontal mutually beneficial relations and on this basis to create a favorable innovation environment for a single-industry city, which provides for a simultaneous positive dynamic development of all elements. In this case, the contradictions are stabilizing and lead the state of the innovation environment of the monotown to a new higher level of development.

The formation and development of the innovation environment of the monotown are ensured by the implementation of a set of general and particular management principles. Thus, the article proposes private principles for managing the innovation environment of a single-industry city: unity through diversity; progressive evolution: complication, acceleration and economy; completion; balance of economic and social; «Counter» movement in return for «movement from a single center»; the establishment of a common pace of development in the unified parts; localization of the structure in an unstable environment; equifinality; irreducibility; long-range correlations. Realization of private principles of management of the innovation environment of a single-industry city, resulting from innovative economic relations, laws and regularities, will allow building an effective management system for the innovation environment of a single-industry town on the basis of horizontal links. The proposed approach to the formation of the management system of the innovation environment is manifested in practice through selected measures of the subject's influence on the management object, that is, through a system of management methods. The system of management methods for the innovation environment includes economic, organizational, administrative and socio-psychological methods. The specificity of their content is determined by the specifics of the object of management, the goals and tasks facing it.

Hence the conclusion that the developed management system of the innovation environment of a single-industry city is aimed at systematically searching for new opportunities for innovative development, overcoming the fragmentation and lack of purposefulness of the innovation practice and includes a management model of the innovation environment of the single-industry city and an organizational mechanism. As established in the course of the study, the features of the management model of the innovation environment of a single-industry company are the active use of horizontal links and the reduction of the role of hierarchical structures (Figure 2). The distinctive features of horizontal

structures include the following: a decrease in the number of management levels and, accordingly, a reduction in the control functions; the emphasis is shifted to ensuring a higher level of coordination in the framework of managing the innovation environment of the single-industry city; the ability to transform the management structure in accordance with changes in environmental conditions. At the same time, the legal powers of the subject of management are distributed vertically. Horizontal power is not defined by a formal hierarchy and a rigid organizational scheme, but is related to cross-links. Each subsystem and each element make a unique contribution to the achievement of the priority goals of the development of the innovative environment of the single-industry city.

Conclusion

Hence the conclusion that the developed system for managing the innovation environment of the monotown is aimed at a systematic search for new opportunities for innovative development, overcoming fragmentation and non-purposefulness of innovative practices, and includes a model for managing the innovation environment of a single-industry city and an organizational mechanism. As established in the course of the study, the peculiarities of the management model of the innovation environment of a single-industry city are the active use of horizontal links and the reduction of the role of hierarchical structures. The distinctive features of horizontal structures include the following: reducing the number of control levels and, correspondingly, reducing control functions; the emphasis is shifted to ensuring a higher level of coordination within the management of the innovation environment of the single-industry town; ability to transform the management structure in accordance with changes in environmental conditions. At the same time, the legal powers of the subject of management are distributed vertically. Horizontal power is not determined by the formal hierarchy and rigid organizational scheme, but has to do with cross-linking. Each subsystem and each element make their unique contribution to the achievement of the priority objectives of the development of the innovation environment of the monotown city.

Today, the formation of a regional policy aimed at more effective development of single-industry cities, including a set of measures for investment and innovative development, increasing the effectiveness of state support, reducing the imbalance in the labor market, and developing

public private partnerships in single-industry cities is becoming topical. The definition of effectiveness from the implementation of measures becomes one of the necessary factors for the rational allocation of budgetary funds.

Thus, we can draw the following conclusions: in modern conditions, the current organizational mechanism for managing the innovation environment of a single-industry town does not adequately

meet the goals and objectives of development. In this regard, in the framework of improving this organizational mechanism, considering the basic functions of a single-industry company, it should be taken into account that its modernization and development of the innovation environment will have an impact on the socio-economic position of the city, region and the entire national economy as a whole.

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