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Innovation environment as a key factor in the development of the region's innovative potential

Abstract

Object: The regional innovation environment, as the major factor, is the object of research for the development of innovative potential.

Methods: This article uses such research methods as generalization, comparison, systematization and statistical analysis.

Results: It is important to reveal regional features, the group of factors that contribute to the development of innovative potential in an innovative environment. The innovation environment is considered from the point of view of the institutional, corporate and educational innovation environment that promotes effective innovation in the region. The basic factors at the micro-, meso-, macro levels that have a positive effect on the development of the region's innovation environment are revealed. The main indicators of innovation activity and dynamics of internal expenditures on research in Kazakhstan for 2015–2019 are analyzed in order to determine the significance of the educational innovation environment.

Conclusions: The conclusion is made about the importance of educational, institutional and corporate innovation environments based on the identified activities. The rational use and development of innovative potential is possible only when the studied factors of the innovation environment interact, which will allow us to concentrate all the obvious and hidden opportunities of the region into a single innovation system.

Keywords: innovative environment, innovative environment of the region, factors of the innovative environment, innovative potential, corporate culture, commercialization, knowledge generation, innovation system.

Introduction

In modern circumstances the way of innovative development is connected with the realization of all strategic programs of regional and state development. This involves the development of innovative environment that would response to all the requirements of social economic nature and its long term prosperity. An enabling environment in the country stimulates the development of innovative potential, functioning of innovative system and process. The relevance is revealing the regional peculiarities, the group of factors impacting the development of innovative potential in the given area.

Regional innovative environment provides an impact of existing groups of factors with characteristic features, cultural peculiarities of population, priorities in the innovational development, an attitude of residents toward changes. The novelty and significance of research include the development of theoretical methodological support, as well as the explanation of scientific and practical methods that are directed to achieve stable regional innovative development implementing environmental factors.

Of course, the goal of creating an innovative environment in the region and the country is the formation of a favorable regulatory framework for state innovation policy, economic and organizational conditions, which will contribute to the development of new scientific and technological achievements in production. During the forming process of innovative environment the sectorial features shall be taken into account as well as the specific characteristics of innovation development in the economic system.

On the basis of established triad, institutional, educational, and corporative aspects should undoubtedly find their application in an appropriate structure of a practical innovative activity.

Regional environment of innovation contributes to expand an interrelation between all the institutes and accelerates the work of innovative process to involve regional organizations and enterprises that are engaged in research developments and educational services as well.

Carried out analysis of the concept “innovative environment” will allow to disclose it as a combination of economical, legal, social and institutional ambiance, maintaining complex favorable conditions for realization of strategic programs. The term “innovative environment” is understood as multilayered system, which integrates external and internal factors, providing and retaining the development of innovative activity.

Definitely, varieties of the listed and considered factors influencing innovative environment in exact region make an effect on innovative process in general, therefore it is necessary to be precisely aware of existing innovative possibilities. The development and rational use of innovative potential is possible only with the interaction of factors of the innovative environment, which will allow concentrating and forming all the possibilities into a single innovation system.

Literature Review

The innovative development the in region, interactions between authorities and participants of innovative actions were investigated by both Russian and foreign scientists. In particular, many scientists believe that the innovation environment should be studied as a new trend that contributes to the formation and improvement of the innovation process.

In 1980s the group of explorers GREMI (Groupede Recherche Europeensurles Milieux) (Fromhold-Eisebith, M., 2002) in particular, considered the term "innovative environment" as a means of systematic conditions analysis that stimulates the development of new markets, creation of new manufacturing fields, the activation of innovative process and increase of new business ideas for entrepreneurship. Accordingly, GREMI group of researchers examined the following:

– Innovative environment as a certain condition for the formation, design and diffusion of innovations.

– Systematic interrelations between elements of innovative environment.

– Sociological aspect of innovative environment as the fundamental basis for creating innovative product.

The empirical approach helped GREMI scientists to create the groups of elements for innovative environment — the inventors of intellectual goods (NRI, Universities, and individual innovators), innovative infrastructure, investors and innovative process users.

The author of a given article supposes that above-considered definition embraces all the institutes, the elements of innovative environment that interact with each other to reach exact goals in a particular region or country. Definitely, it is a right way to activate the innovative process on a local or regional and state levels, which need responsible and close-knit team of various institutions, which could improve prosperity of a nation, increase and commercialize innovative product, manage the development of innovative potential.

The Dutch scientist Jenson J. Ole supposes that innovative process is influenced by social relationships and networks of different levels (local, regional, national), which assist an exchange of proposed ideas and prompt information (Jenson. J., 2004). In this case, networks mean informal relationship of participants in innovative system, which have common goals, defined by geographical locations and diverse values.

A.A. Nesterov (Nesterov A.A., 2012) assumes the regional innovative environment as a system, which takes into consideration several subsystems, like educational, research, innovative enterprises and companies, investment branches, political and institutional support.

In the opinion of Yu.A. Karmysheva and N.V. Ivanova (Karmysheva Yu. et al., 2015), innovative environment is the interrelation of regional external ambiances (mega-, macro- and meso-levels) and regional innovative system, which is identified by complex dynamically developing administrative, economic and financial relationships, making competitive regional innovative development and action between business entities.

R. Boschma examined innovative environment as a concept of "proximity" on the basis of GREMI and cluster theory, which presents a range of institutions that state necessary terms for the effective development of innovations. Thus, when forming innovational environment, social and institutional proximity sets up an effective link between innovation and know-how (Boschma R., 2005).

Kim G.H. investigates the structure of the innovative environment as a way that transforms innovative ideas into commercialization, so-called "path-breaking way", which requires availability of material and human resources, as well as infrastructural, financial and institutional resources. As a result the innovation environment is focused on the following interrelated aspects: educational, entrepreneurial, investment, and research (Kim G.H., 2014).

In 1980s Manuel Castells began to investigate the term "innovative environment" as a means of systematic condition analysis that offers to economic entities new ideas, goods and services to produce, setting up new manufacturing locations and development of new markets.

Innovative environment is the basis for growth of regional innovative capability and its realization through generation of knowledge, new products, and new innovative processes with a view to achieve prior innovative results for region (Kastel's M. et al., 2000; 368).

Systematically arranging reviewed studies, we conclude that innovative environment is a complex of interrelated factors, elements, special features and institutions that contribute to achieve goals of innovative development.

Based on the above-mentioned, the author suggests her own definition of "innovative environment" as a set of elements, clusters, factors and terms that provide interaction of all systems, creating innovations in the formation process, as well as managing them. Thus, the innovation environment has a positive impact on investment, helps to reduce the risks of an innovative project and has a fruitful impact on the commercialization of the results of research and development.

Methods

Scientific research materials in the sphere of innovative development of a region were studied, which were also used to write the given research work. To carry out given research method of comparison has been implemented according to the data from Statistics Committee of the Ministry of National Economy of the Republic of Kazakhstan. The number basic innovational activity indicators in the Republic of Kazakhstan in a period of 2015 and 2019, such as a share of innovative products to GDP, the amount of innovative products (goods, services), the volume of realized innovative products, and the level of innovational intensity under the technological innovations, general expenditure for research works and technological innovations were used. Currently the most spread method is statistical, which allows to gather, process and analyze quantity data to determine the state of the investigated object. In order to define the importance of educational innovative environment, comparative method for key branches of the science in Kazakhstan between 2015–2019 has been used, such as natural sciences, medical, agricultural, social humanitarian sciences an engineer development and technologies. Comparative method is often applicated to compare one or more indicators, to make a contrast between two things to systematize and group the data.

Results/Discussions

The regional progress of innovative environment is possible if there exists an effective and prospective innovative system, which makes a positive impact on the active engagement of the enterprise, innovative occupation, and the development of regional innovative capability. The key factors that have a positive impact on the creation of an innovative environment are considered at the micro-, meso-, and macro levels (Shmanev S., 2011):

– macro-economic level considers political stability, economic changes, legal framework, climate conditions, availability of national research centers, patent agencies;

– meso-economic level considers the progress of infrastructure, possibilities for investment, sophistication and market coverage, technical science information center, demand for innovative products and services, and research laboratories;

– micro-economic level of external sphere is provided with high qualified specialists, contract partners, the existence of business rivalry, availability and demand for innovative products and services, research laboratories;

– micro-economic level of internal sphere is determined by the availability of innovative infrastructure, liveliness, and improved level of innovative potential, level of advanced education, science and relation between them, financial support for innovative work.

These peculiar factors of forming the regional innovative environment present its special aspects in multifunctional economic development that will find their implementation in practical activity. Basically, development process of innovation can be effective only under definite terms; therefore the main task is to organize an effective innovation environment that promotes the development and commercialization of innovative ideas and economic growth in the region and the country as a whole.

Innovative environment represents the unity of internal and external factors of innovative process. The internal factors involve all the components of innovative potential, that is to say, all possibilities and used resources that are able to transform into business ideas, as well as their further commercializing. External factors are connected with institutional units and their changes, stimulating innovative development that represents national innovation system as a whole. Interconnection of internal and external factors, regional institutes, entrepreneurs and educational institutions play an important role in establishing of innovative environment of region. Regional innovative environment's development is based on the following aspects (Goryunova L., 2015, Erkenova A. et al., 2017, Raikhlina A., 2017):

1. Institutional environment.
2. Business environment.
3. Educational environment.

Institutional environment implies an interaction of financial, social and legal type of organizations. This sphere gives an opportunity to entities of innovative activity to associate with other segments of national

economics that have cultural and political characteristics, traditions, rules and mechanisms of regulating relations in society. Legal and regulatory framework is supposed to be its basic element. Also, due to the relations between the existing institutions, the efforts of certain state and local authorities and financial institutions to support and promote the innovative project are carried out and coordinated.

Accordingly, institutional environment shall be created by assistance of state bodies and institutions to promote innovative, science and technical, financial politics.

Further we will discuss business environment, which is made under the influence of innovative business culture. Business environment means traditions, moral and spiritual values, a set of behavior rules, internal and external values that occure during the work of company. The work of business environment in the company is executed under three levels: external, internal, and deep, i.e., during unconscious transformation of personal qualities in compliance with requirements, various rewards in company.

The system of innovative education for business environment depends on sincere interest of company's leadership in seminal and effective work over innovation activity. Business environment is unable to operate independently from other institutions. Hence, the progress of innovative business environment will depend on the combination of ideas, values, sustainable rules and principles, intrinsic to organization; focusing on final results and team work, qualitative business culture that establish social and economic relationships.

Correspondingly, innovative business environment and culture serve as mutually reinforcing foundation of innovative potential, which assists to execute innovative activity in region or country.

The basic elements of educational innovative environment include enlargement of marketability through education, cooperation degree with science organizations, other universities, foreign universities, organizations of research work and etc. Thus, innovative educational environment provides implementation and increase of new product; inventing and developing startups; acquiring individual skills in the sphere of innovation studies; long term realization of scientific innovational projects.

Obviously, creation of special science-based fields (research laboratory, technological hub, business incubator, startup center and others.) commonly become practical and research base for university students (Nazarbayev University, "Alatau" Innovative Park of Technologies, Astana Hub). Kazakhstan start-up market began to gain its turnover since 2014. In the startup markets of developed countries (Europe, USA, China, Japan) the share of innovations in the GDP structure exceeds 20 %, while in Kazakhstan it is only 1,4 %. By 2024 an increase of up to 5 % of GDP is forecast. It is likely that, intensity of innovation will increase on the basis of created research areas in a country in the future.

The author of the article supposes that the given scheme should obviously find its practical implementation in an appropriate triad of the innovative activity. Systematic use and realization of three aspects will definitely lead to a positive result, as they are connected and depend on each other. Thus, on the abovementioned basis, innovative environment of the region forms on three aspects (Figure 1).

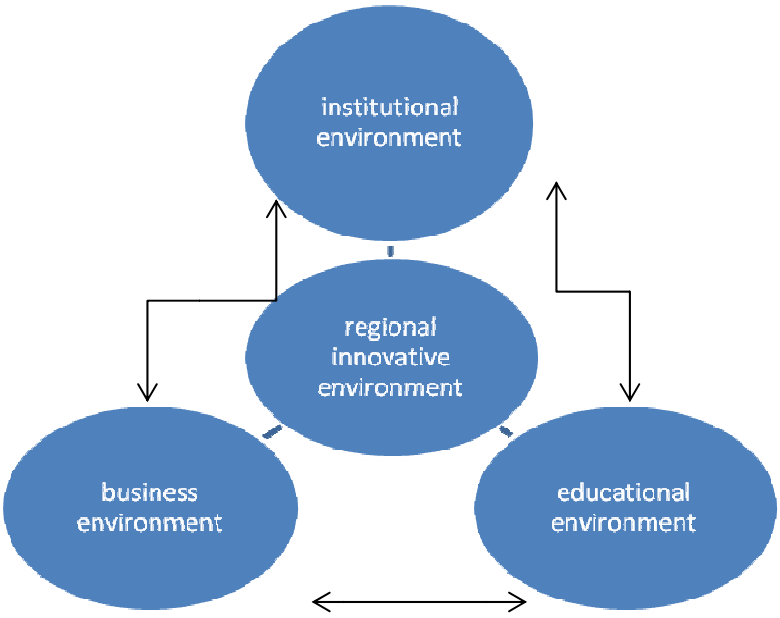

Figure 1. The formation of regional innovative environment

Note: compiled by author

The main objective of aspects described is the creation of enabling possibilities, close cooperation of educational institutions with institutes and state, fulfillment of scientific-practical ideas and business projects. In this case educational innovative environment (university) is regarded as a link because it is supposed to be the foundation of research elaboration, structural design works, and business ideas.

The final result depends on exact requirements, regional specific features, location, and innovative intensity of enterprises, existing innovative capacity and innovativeness, creativity of young professionals, etc.

Qualitative characteristic of innovative environment is determined by the increase of innovative intensity and innovative potential of region or country. Dynamic results of innovation activity in a country are reviewed in the Table 1.

Table 1. Main indicator analysis of innovative activity in the Republic of Kazakhstan, 2015–2019.

Indicators	2015	2016	2017	2018	2019
GDP, % proportion of innovative product	0.92	0.95	1.55	1.91	1.42
Amount of innovative product (goods, services), m. tenge	377 196.7	445 775.7	844 734.9	1 179 150.2	981 328.3
Amount of produced innovative products (goods, services), m. tenge	341 270.9	451 630.4	854 258.3	1 134 952.6	864 652.4
Level of intensity in the sphere of innovation under all types of innovations, %	8.1	9.3	9.6	10.6	11.3
Level of intensity in the sphere of innovation under processes of innovation and products, %	5.6	5.6	5.7	6.6	7.5
Expenditure on R&D	86 572.9	89 509.8	92 732.4	99 706.7	118 070.7
Internal expenditure, m. tenge	69 302.9	66 601.1	68 884.2	72 224.5	82 333.1
External expenditure, m. tenge	17 270.0	22 909.7	23 848.2	27 482.1	35 737.6
Expenditure on products and process innovations, m. tenge	655 361.0	1 528 645.9	899 681.8	856 449.5	535 046.2
Note: compiled by author on the basis of CS MNE RK source					

In accordance with performed analysis it is revealed that the proportion of innovative product in Kazakhstan has grown from 0,92 % up to 1,91 %, but in 2019, owing to the crisis, it is declined to 1,42 %. Correspondingly, the amount of innovative product has increased twice. The data regarding the level of activeness under all types of innovation has risen from 8,1 % to 11,3 %, i.e., 1,3 times. Expenditure on R&D is climbing each year, financial support went up 1,4 times in 2019 comparing to 2014. At this point of innovative development, there is a strong focus on R&D in the country.

The development of educational innovative environment is supported by State Program of Educational Development and Science of the Republic of Kazakhstan for 2020–2025, which ensures the continuation of modernization of Kazakhstan's education. The goal of this program is to increase the global competitiveness of Kazakhstan's education and science, education and training of individuals based on universal values, as well as to increase the contribution of science to the socio-economic development of the country (State Program for the Development of Education of the Republic of Kazakhstan for 2020–2025, 2019).

Nowadays, the facilities are provided for improvement of education, such as increasing educational scholarships, implementation of innovative methods and technologies of teaching in universities, involving international exchange programs (Tempus, Tasis, Erasmus Mundus, Irex and others), and opening research centers in universities. All these assist to make research discoveries in different branches of science (Figure 2).

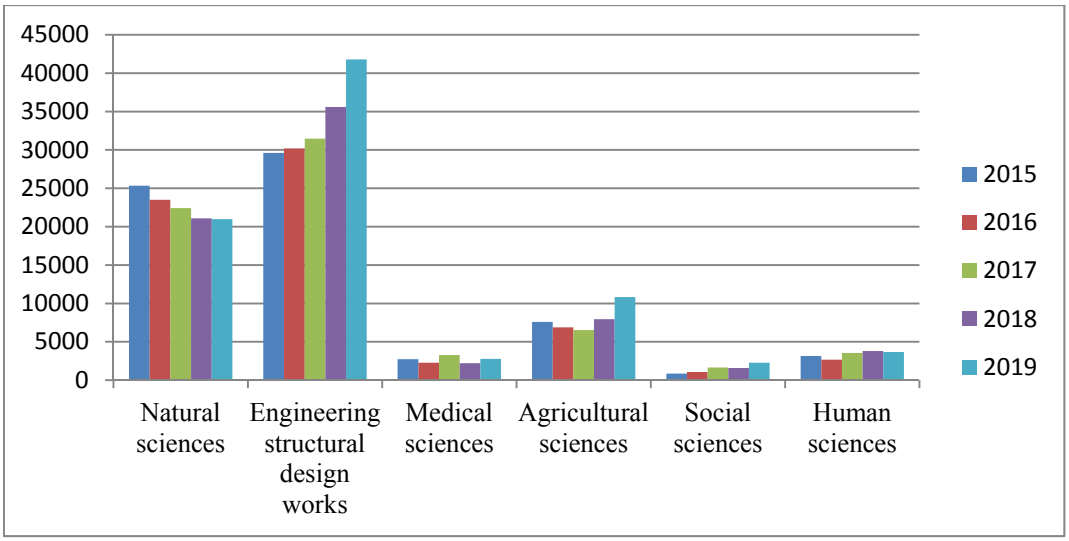

Figure 2. The dynamics of internal expenditure of R&D concerning branches of science Kazakhstan, 2015–2019

Note: compiled by authors based of CS MNE RK (source stat.gov.kz)

According to the data, the sphere of natural science, structural design and technology of engineering was and will always be relevant. In 2019 expenditure on engineering structural design has risen 1.4 times comparing to 2015. The less developed branch for investment is social science. In 2019 2275.1 million tenge had been spent compared with 2015 (850,5 m. tenge). As national practice shows, engineering technology is in demand for scientific discoveries and innovations.

In the opinion of international experts, the top science directions in Kazakhstan are nanotechnology, biotechnology, technology for hydrocarbon and mining and metallurgical sectors, informational and space technology.

Conclusions

Consequently, innovational environment is the set of composed for a certain period geographical features, innovative and enterprise culture, generation and application of acquired knowledge, mastering and presenting a new product to the market. Considering the interaction of institutional and educational aspects of innovative environment on the level of region, it is possible to systematize the following arrangements:

– Support and realization of main innovative projects.
– Mastering innovative field of region or country.
– Implementation of science based product, commercializing new technology in the sphere of education.
– The creation of new science based product and its presentation at international market.
– The state support and stimulation of innovative business structures.

Therefore the region has a good potential for innovation but it is not used to its full potential. At the state level, state programs and comprehensive measures to activate innovative activities are being developed and implemented, and separate institutional bodies and structures are being formed to ensure productive and competitive work. The primary objective of uniting the state, science and enterprise is creating an enabling innovative environment in region for the transformation into new level of national innovative system development.

References

Boschma R. (2005). Proximity and Innovation: A critical Assessment, *Regional Studies, 39, 1, 61–74.*

Fromhold-Eisebith, M. (2002, August 27–31). Innovative milieu and social capital-exploring conceptual complementarities (Example of the Aachen region, Germany). *Paper to be presented at the conference of the European Regional Science Association (ERSA).* Dortmund, 56–59.

Gorjunova L.A. (2015). Innovacionnaja institucional'naja sreda kak faktor ustojchivosti territorial'nogo razvitija. *Vestnik Burjatskogo gosudarstvennogo universiteta.* 2a, 21–25 [in Russian].

Jenson, J. O., & Tollin, N. (2004). Networks as Tools for Sustainable Urban Development. Paper presented at Innovation, *Sustainability and Policy*, Münich, Germany, 16.

Jerkenova, A.V., Urusova, Z.M. (2017). Sovremennye podhody k opredeleniju sushchnosti innovacionnoj obrazovatelnoj sredy vuza. *Problemy sovremennogo pedagogicheskogo obrazovanija*, 54, 6, 233–241 [in Russian].
Karmyshev, Ju.A., Ivanova, N.V. (2015). Kategorii "region" i "innovacionnaja sreda regiona": nauchnye podhody k ponimaniju sushchnosti i soderzhanija. *Social'no-jekonomicheskie javlenija i process*, 7, 10, 41–47 [in Russian].
Kastel's, M. (2000). Informatsionnaya epokha: ekonomika, obshchestvo i kul'tura *[Information epoch: economy, society and culture]*: per. s angl. / O.I. Shkaratan (Ed.). Moscow: GU "VShE" [in Russian].
Kim G.H. (2014). Faktory formirovaniia innovatsionnoi sredy natsionalnoi ekonomiki [Factors of the formation of the innovative environment of the national economy]. Uchenye zapiski SPb un-ta upravleniia i ekonomiki — *Scientific Notes of the St. Petersburg University of Management and Economics*. 3,47, 87–93 [in Russian].
Gosudarstvennaya programma razvitiya obrazovaniya Respubliki Kazakhstan na 2020–2025 gody № 988 ot 27 dekabrya 2019 g. — (https://iqaa.kz/normativno-pravovye-dokumenty-rk/gosudarstvennye-programmy).
Nesterov, A. A. (2012). Innovacionnaja sreda jekonomicheskih sistem: struktura, ocenka i upravlenie. *Upravlenie jekonomicheskimi sistemami: jelektronnyj nauchnyj zhurnal*, 9, 45, 37 [in Russian].
Offitsialnyi site Komiteta statistiki Ministerstva nacional'noj jekonomiki Respubliki Kazahstan [Official webside of the Statistic Committee Ministry of National Economy of the Republic of Kazakhstan]. *stat.gov.kz.* Retrieved from https://stat.gov.kz/faces/wcnav_externalId/ecolog-A-1? lang=ru [in Russian].
Offitsialnyi site Negosudarstvennogo uchrezhdenija "Nezavisimoe agentstvo po obespecheniju kachestva v obrazovanii" [Official website of the NO "Independent Agency for Quality Assurance in Education"]. *iqaa.kz.* Retrieved from https://iqaa.kz/normativno-pravovye-dokumenty-rk/gosudarstvennye-programmy [in Russian].
Rajhlina, A.V. (2017). Formirovanie innovacionnoj sredy regiona kak vazhnejshee uslovie jeffektivnoj innovacionnoj dejatel'nosti. *Internet-zhurnal "NAUKOVEDENIE*", 4, 9. *naukovedenie.ru.* Retrieved from http://naukovedenie.ru /PDF/38EVN417.pdf [in Russian].
Shmanèv, S.V. (2011). Dinamicheskaja model' prognozirovanija jeffektivnosti investicij v innovacionnye proekty na promyshlennom predprijatii. [Tekst]/ I.G. Parshutina, S.V. Shmanèv. *Vestnik OrelGIJeT,* 4, 18, 34–38 [in Russian].

Г.А. Акжанова

Инновациялық орта аймақтың инновациялық әлеуетін дамытудың негізгі факторы ретінде

Аңдатпа

Мақсаты: Инновациялық әлеуетті дамытудың маңызды факторы ретінде аймақтық инновациялық орта зерттеу объектісі болып табылады.

Әдісі: Мақалада жалпылау, салыстыру, жүйелеу және статистикалық талдау сияқты зерттеу әдістері қолданылды.

Қорытынды: Аймақтық ерекшеліктерді, инновациялық ортадағы инновациялық әлеуеттің дамуына ықпал ететін факторлар тобын ашу өзекті болып табылады. Инновациялық орта аймақтағы тиімді инновацияларға ықпал ететін институционалдық, корпоративті және білім беру инновациялық ортасы тұрғысынан қарастырылды. Аймақтың инновациялық ортасының дамуына оң әсер ететін микро, мезо-макродеңгейдегі негізгі факторлар анықталды. Білім беру инновациялық ортасының маңыздылығын анықтау мақсатында инновациялық қызметтің негізгі көрсеткіштері және Қазақстан Республикасы бойынша 2015–2019 жылдардағы ғылыми зерттеулерге ішкі шығындардың динамикасы талданды.

Тұжырымдама: Анықталған іс-шаралар негізінде білім беру, институционалдық және корпоративтік инновациялық ортаның маңыздылығы туралы қорытынды жасалды. Осылайша, инновациялық әлеуетті ұтымды пайдалану және дамыту инновациялық ортаның зерттелетін факторларының өзара іс-қимылы кезінде ғана мүмкін, бұл өңірдің барлық айқын және жасырын мүмкіндіктерін бірыңғай инновациялық жүйеде шоғырландыруға мүмкіндік береді.

Кілт сөздер: инновациялық орта, аймақтың инновациялық ортасы, инновациялық орта факторлары, инновациялық әлеует, корпоративтік мәдениет, коммерциализация, білімді қалыптастыру, инновациялық жүйе.

Г.А. Акжанова

Инновационная среда как ключевой фактор развития инновационного потенциала региона

Аннотация

Цель: Объектом исследования является региональная инновационная среда как важнейший фактор развития инновационного потенциала.

Методы: В статье использованы такие методы исследования, как обобщение, сравнение, систематизация и статистический анализ.

Результаты: Актуальным является раскрытие региональных особенностей, групп факторов, способствующих развитию инновационного потенциала в инновационной среде. Инновационная среда

рассмотрена с точки зрения институциональной, корпоративной и образовательной инновационной среды, способствующей эффективной инновационной деятельности в регионе. Раскрыты основные факторы на микро-, мезо- макроуровнях, которые положительно влияют на развитие инновационной среды региона. С целью определения значимости образовательной инновационной среды проанализированы основные показатели инновационной деятельности и динамика внутренних затрат на научные исследования по Республике Казахстан за 2015–2019 годы.

Выводы: Сделан вывод о значимости образовательной, институциональной и корпоративной инновационных сред на основе проведенных мероприятий. Таким образом, рациональное использование и развитие инновационного потенциала возможны только при взаимодействии исследуемых факторов инновационной среды, что позволит сконцентрировать все явные и скрытые возможности региона в единой инновационной системе.

Ключевые слова: инновационная среда, инновационная среда региона, факторы инновационной среды, инновационный потенциал, корпоративная культура, коммерциализация, генерация знаний, инновационная система.

References

Boschma R. (2005). Proximity and Innovation: A critical Assessment, Regional Studies, 39, 1, 61–74.

Fromhold-Eisebith M. Innovative milieu and social capital-exploring conceptual complementarities (Example of the Aachen region, Germany) // Paper to be presented at the conference of the European Regional Science Association. — Dortmund, August 27–31, 2002. — P. 56–59.

Jenson J. Ole. Networks as a tool for urban sustainable development // Paper for the international conference “Innovation, Sustainability and Policy”. — Munich, 23–25 May, 2004. — P. 5.

Государственная программа развития образования Республики Казахстан на 2020–2025 годы № 988 от 27 декабря 2019 г. — (https://iqaa.kz/normativno-pravovye-dokumenty-rk/gosudarstvennye-programmy).

Горюнова Л.А. Инновационная институциональная среда как фактор устойчивости территориального развития/ Л.А. Горюнова // Вестн. Бурят. гос. ун-та. — 2015. — № 2а. — С. 21–25.

Кастельс М. Информационная эпоха: экономика, общество и культура / М. Кастельс; пер. с англ., под науч. ред. О.И. Шкаратана. — М.: ГУ ВШЭ, 2000. — 608 с.

Кармышев Ю.А. Категории “регион” и “инновационная среда региона”: научные подходы к пониманию сущности и содержания / Ю.А. Кармышев, Н.В. Иванова // Социально-экономические явления и процессы. — 2015. — № 7(10). — С. 41–47.

Ким Г.Х. Факторы формирования инновационной среды национальной экономики / Г.Х. Ким // Ученые записки СПб. ун-та управления и экономики. — 2014. — № 3 (47). — С. 87–93.

Нестеров А.А. Инновационная среда экономических систем: структура, оценка и управление / А.А. Нестеров // Управление экономическими системами: электрон. науч. журн. — 2012. — № 9 (45). — С. 37.

Официальный сайт Комитета статистики Министерства национальной экономики Республики Казахстан. — (https://stat.gov.kz/).

Официальный сайт Негосударственного учреждения “Независимое агентство по обеспечению качества в образовании”. — (https://iqaa.kz/ob-agentstve/).

Райхлина А.В. Формирование инновационной среды региона как важнейшее условие эффективной инновационной деятельности / А.В. Райхлина // Интернет-журн. “НАУКОВЕДЕНИЕ”. — 2017. — № 4 (9). — (http://naukovedenie.ru/PDF/38EVN417.pdf).

Шманѐв С.В. Динамическая модель прогнозирования эффективности инвестиций в инновационные проекты на промышленном предприятии. [Текст] / С.В. Шманѐв, И.Г. Паршутина // Вестн. ОрелГИЭТ. — 2011. — № 4 (18). — С. 34–38.

Эркенова А.В. Современные подходы к определению сущности инновационной образовательной среды вуза / А.В. Эркенова, З.М. Урусова // Проблемы современного педагогического образования. — 2017. — № 54 (6). — С. 233–241.