Peculiarities of Development of Innovative Enterprises in Kazakhstan

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Abstract:

In modern conditions of development of the national economy, one of the main priorities, for an increasingly conscious Kazakhstan society, is the need to follow the course of innovation policy, since the level of competitiveness of domestic enterprises depends on innovative activity in the scale of the global economy, the share in different types of markets and the effectiveness of innovation.

In this article, a literature review of domestic and foreign reseach is conducted, which carried out the regularities and the features of the development of innovation and innovation action, including the Republic of Kazakhstan.

As a result of the conducted study, the theoretical and the methodological aspects of researching the development of innovation policy are systematized, on the basis of which the corresponding conclusions are drawn.

Keywords: Innovations, innovation activity, innovation action, national economy, entrepreneurship, regions.

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1. Introduction

In the modern economy, most of the innovations are realized by entrepreneurial structures as a means of solving production and commercial tasks. The search and introduction of new technologies, new types of products with improved consumer characteristics, the formulation and solution of non-standard problems of economic development are provided through the implementation of such functions of entrepreneurship as innovation, creativity, innovation and readiness for risk. The emergence and development of innovation, its implementation, implementation and use are also subject to entrepreneurial activity. In studies of innovation activity, both at the country level and at the regional level, the following main groups of factors exist: internal indicators of firms; institutional indicators that characterize the markets in which the firm operates; indicators of human capital; agglomeration effects; indicators of state support (Chen and Sawhney, 2010).

Table 1 presents indicators that reflect indicators related to different groups of factors in 2017.

Table 1. *Factors and corresponding indicators of innovation activity*

Factors	Corresponding
Company internal indicators	Profit, ownership, size, involvement in foreign economic activity, indicators of costs and performance, including expenditure on R & D, general factor productivity, direct foreign investment at firm level (FDI), firms return
Institutional factors	Indicators of regional investment attractiveness, business climate, tax policy of the state, barriers to entry to markets, political climate in the country, problems of access to finance, transparency of the economy
Factors of human capital	The quality of the workforce, staff development, the availability of state programs for the training of highly qualified personnel
Factors of agglomeration effects	Indices of localization and urbanization, the level of specialization, the activity of interaction of enterprises among themselves
Indicators of state support	The volume of subsidies, grants, the size of benefits, the availability of government orders
Other country and regional indicators	Public or national indicators such as GDP, GRP, net exports, FDI at the country and regional level, other macro-level indicators not included in previous groups

Summing up, it can be noted that for a more complete economic evaluation of innovation activity at the firm level, it is necessary to take into account the indices of each of the selected groups, since the factors of each group have a significant influence on the firm's decision to participate in innovations, while not having a strict functional dependence with friend (Jacobs and Snijders, 2008; Menshchikova and Sayapin, 2016).

2. Methodology

In Kazakhstan, the existing methodology developed by the Committee on Statistics of the Ministry of National Economy of the Republic of Kazakhstan uses a generalized scheme for calculating the results of innovation that reflects the innovative activity of enterprises, regions and the country, calculated as the share of innovative products in the total output (Armeisky *et al.,* 2011; Zhuparova, 2013). The methodology used by the Agency to assess innovation includes the following indicators: the level of innovative activity in the field of innovation; costs for technological innovation by forms of ownership; costs of technological innovation in industry; share of innovative products in relation to GDP in%; internal current expenditure on research and development by branches of science, by type of work and by area. The methodology used by the Committee uses a generalized scheme for calculating the results of innovation activities, which reflects the innovative activity of enterprises, regions and the country and is calculated as the share of innovative products in total output (Dzhusibalieva, 2011; Bondarenko *et al.,* 2017).

Table 2. *The main indicators of innovative activity of enterprises for all types of innovation*

	Number of enterprises, total, units				Including				Level of activity in the field of innovation, in%			
					Innovative							
	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016
Kazakh-stan	22 070	24 068	31 784	31077	1774	1 940	2 585	2 879	8.0	8.1	8.1	9.3
Akmola	1 173	1 270	1 325	1301	83	92	90	91	7.1	7.3	6.8	7.0
Aktobe	1 044	1 114	1 236	1234	68	85	86	115	6.5	7.6	7.0	9.3
Almaty	1 318	1 473	1 643	1648	126	139	114	129	9.5	9.4	6.9	7.8
Atyrau	798	977	1 276	1193	41	79	102	101	5.1	8.1	8.0	8.5
West Kazakhs tan	646	768	857	917	34	51	35	33	5.3	6.6	4.1	3.6
Zham-byl	734	808	852	834	75	98	90	90	10.2	12.2	10.6	10.8
Kara-ganda	1 957	1 902	2 340	2235	148	159	216	238	7.6	8.4	9.2	10.6
Kosta-nay	1 393	1 500	1 502	1438	164	204	218	161	11.8	13.6	14.5	11.2
Kyzyl-orda	709	725	846	812	85	73	99	91	12.0	10.1	11.7	11.2
Mangis-tau	838	922	1 027	1060	20	32	41	43	2.4	3.4	4.0	4.1
South Kazakhs tan	2 009	2 025	2 315	2366	129	143	160	156	6.4	7.0	6.9	6.6
Pavlo-dar	1 118	1 142	1 354	1286	95	79	65	83	6.4	6.9	4.8	6.5
North-Kaza-khstan	1 047	1 001	1 047	1049	114	116	111	119	10.9	11.6	10.6	11.3

East Kaza-khstan	1 767	2 055	2 091	1985	99	157	240	296	5.6	7.6	11.5	14.9
Astana city	1 617	1 997	4 103	4003	179	214	541	543	11.1	10.7	13.2	13.6
Almaty city	3 902	4 389	7 970	7716	314	219	377	590	8.0	5.0	4.7	7.6

According to the survey, the largest number of enterprises with all four types of innovation operate in Almaty (20.5%), Astana (18.9%), East Kazakhstan (10.3%), Karaganda (8.3 %), Kostanai (5.6%) and South-Kazakhstan regions (5.4%) (2016).

Figure 1. *Level of activity in the field of innovation, %*

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Table 3. *The level of innovative activity of enterprises for all types of innovation, %*

	2013	2014	2015	2016
The Republic of Kazakhstan	8.0	8.1	8.1	9.3
Akmola	7.1	7.3	6.8	7.0
Aktobe	6.5	7.6	7.0	9.3
Almaty	9.5	9.4	6.9	7.8
Atyrau	5.1	8.1	8.0	8.5
West Kazakhstan	5.3	6.6	4.1	3.6
Zhambyl	10.2	12.2	10.6	10.8
Karaganda	7.6	8.4	9.2	10.6
Kostanay	11.8	13.6	14.5	11.2
Kyzylorda	12.0	10.1	11.7	11.2
Mangistau	2.4	3.4	4.0	4.1
South Kazakhstan	6.4	7.0	6.9	6.6
Pavlodar	8.5	6.9	4.8	6.5
North-Kazakhstan	10.9	11.6	10.6	11.3
East Kazakhstan	5.6	7.6	11.5	14.9
Astana city	11.1	10.7	13.2	13.6
Almaty city	8.0	5.0	4.7	7.6

As a result of 2016, there were conducted statistical monitoring of innovation activity of 31077 enterprises of the republic. During the reporting period, 2,879 enterprises had innovations (in 2015 – 2,585 enterprises). Compared to 2015, the number of enterprises with innovations, increased by 294 enterprises. The volume of innovative products produced in 2016 increased by 18.2% compared to 2015 and amounted to KZT 445,575.7 million, of which sales of products totaling KZT 451,630.4 million were realized. The volume of innovative products supplied for export amounted to 70,883.5 million tenge.

Figure 2. *Share of innovation products produced in relation to GDP, %*
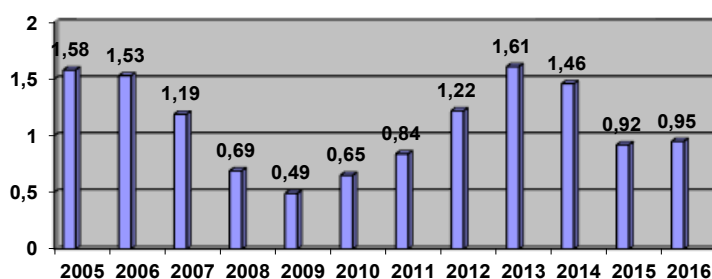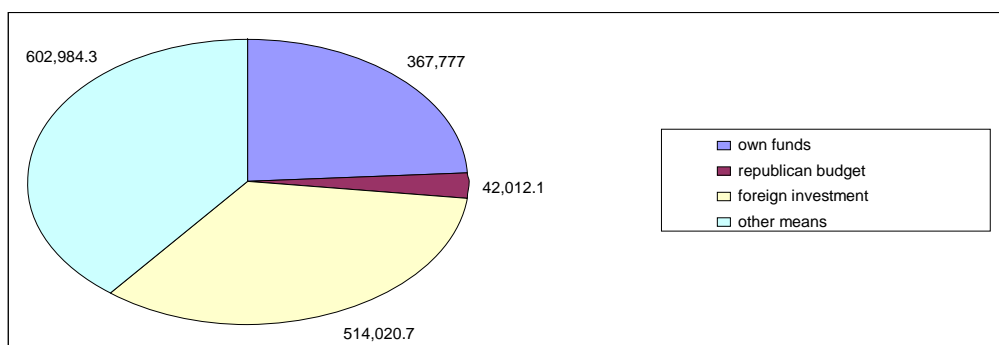

Figure 3. *Costs for food and process innovations by sources of financing, mln. tenge*
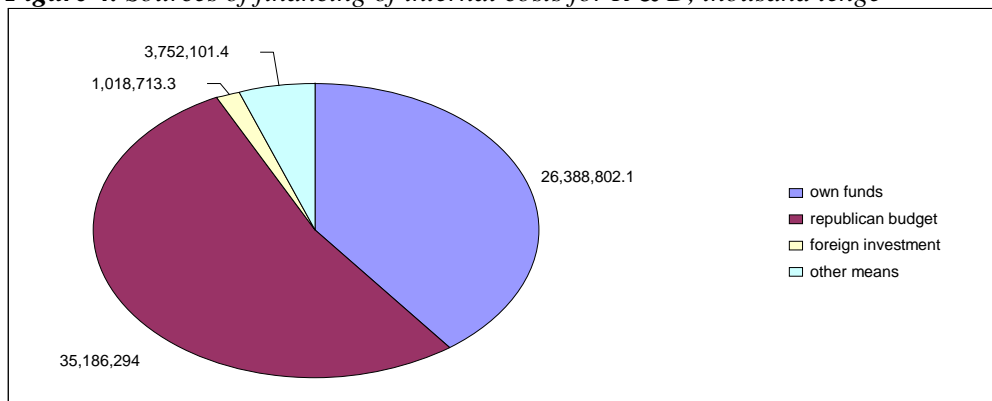

Innovative activity of enterprises for product, process, organizational and marketing innovations was 9.3%, for product and process innovations, 5.6%. The highest activity in the field of innovations for all types of innovation was observed among large enterprises and accounted for 30.7% (of the 1947 reporting large enterprises, 597 carried out innovative activities) (Pushkarev, 2017).

During the analyzed period, the cost of product and process innovations increased by 133% compared to the previous year and amounted to 1,528,645.9 million tenge (in 2015 – 655,361.0 million tenge). At the same time, the cost of product and process

innovations from the enterprises' own funds amounted to 367,777.0 million tenge, which is 24.1% of the total expenditure on food and process innovations (2016) (Figures 3, 4).

Figure 4. *Sources of financing of internal costs for R & D, thousand tenge*

The innovative activity of an economic entity is determined by the ratio of the share of innovation costs in the total volume of the enterprise's costs incurred in the period under review to the same indicator of the period preceding:

$$I = \frac{C_I}{C} : \frac{C_{TI}}{C_T}, \tag{1}$$

where I – degree of innovative activity of the enterprise;
C_i, C_{ti} – innovative costs of the enterprise in the considered and previous periods of time, respectively;
C, C_t – total derivative costs of the enterprise for the same periods of time.
The index of innovative activity of enterprises that make up the sample is calculated as follows:

$$I^\Sigma = \frac{C^\Sigma_I}{C^\Sigma} : \frac{C^\Sigma_{TI}}{C^\Sigma_T}, \tag{2}$$

where I^Σ – degree of innovative activity of sample enterprises;
$C^\Sigma_I, C^\Sigma_{TI}$ – the total innovative costs of sampling enterprises in the period under consideration and the preceding periods, respectively;
C^Σ, C^Σ_T – total production costs of enterprises for the same periods of time.
Comparison of expressions (1) and (2) gives the required coefficient (index) of innovativeness of the economic entity:

$$K_I = \frac{I}{I^\Sigma} : \tag{3}$$

where K_I – enterprise innovation coefficient.

The considered indicators characterize innovative activity from the introduction of innovations.

3. Discussion

At present, innovations are the main way to achieve economic growth and increase competitiveness in all regions.

Innovative economy becomes when innovations are the basis of economic development, the economic interest of entrepreneurs is to promote innovation, and innovation determines the most important areas of business development. Therefore, the solution of the problem of innovative transformation of the kazakh economy is directly related to the use of entrepreneurship as a production factor necessary for the organization of innovative production on the basis of both state and private ownership. Comparing the regions in terms of the degree of development of the innovation economy in them seems to be very difficult, primarily because from the point of view of statistics many data are available only in the "country" section and it is almost impossible to calculate them for individual regions (Agarkov *et al.,* 2011). The most innovative regions are most often found in the countries that have achieved the greatest success in developing the innovative economy (for example in Europe: Sweden, Finland, Denmark, Germany, Great Britain, France), they are characterized by the following indicators: 1) high level of GDP per capita, high concentration of production and developed services; 2) successful implementation of state and regional economic policy.

Lagging regions are characterized by the outflow of population and the lack of the purposeful implementation of state and regional economic policy. In Kazakhstan, entrepreneurship development is one of the priority directions of the state economic policy, and the Government is striving to form a middle class and competitive dynamic business community focused on creating new high-tech industries with the greatest added value. And although the indicators of business development in Kazakhstan differ significantly from those of the developed countries of the world, today the SME of the republic has managed to occupy a corresponding niche in the economy of the state (Kubayev and Baisholanova, 2011).

As of January 1, 2018, the number of operating SMEs increased by 3.6% compared to the corresponding date of the previous year. In the total number of SMEs, the share of individual entrepreneurs was 65.2%, of small businesses – 18.2%, of peasant or farmer households – 16.4%, of medium-sized businesses – 0.2%.

Table 4. *Number of operating SMEs as of January 1, 2018, units*

		Including				In total, in percentage to the corresponding period of the
	Total	legal entities of small business	legal entities of medium-sized	individual entrepreneurs	farming or peasant farming	

			business			previous year
The Republic of Kazakhstan	1 145994	208 742	2 618	747 107	187 527	103.6
Akmola	41 719	6 437	114	31 034	4 134	102.9
Aktobe	50 209	9 032	101	35 935	5 141	104.9
Almaty	109 877	8 627	152	56 297	44 801	101.8
Atyrau	42 897	6 016	103	34 529	2 249	105.3
West Kazakhstan	37 111	5 505	92	26 064	5 450	102.6
Zhambyl	58 692	5 231	51	37 346	16 064	109.0
Karaganda	79 276	16 100	188	55 287	7 701	99.8
Kostanay	48 237	6 614	147	36 368	5 108	101.1
Kyzylorda	37 450	4 827	60	27 500	5 063	105.2
Mangistau	47 015	7 414	84	37 840	1 677	106.5
South Kazakhstan	177 411	16 523	163	92 092	68 633	105.0
Pavlodar	41 311	8 480	103	29 517	3 211	101.7
North-Kazakhstan	27 587	4 704	125	19 595	3 163	99.8
East Kazakhstan	79 966	9 895	163	55 407	14 501	91.9
Astana city	97 251	35 329	261	61 553	108	104.7
Almaty city	169 985	58 008	711	110 743	523	109.5

The development of innovative processes in Kazakhstan is not so much the result of the influence of market mechanisms, but rather the ongoing targeted state policy. It is the state that has a decisive influence on the innovative development of the economy (Coenen and Lopez, 2010).

At the moment, in Kazakhstan the innovative activity of enterprises in the real sector as a whole remains very low, innovative entrepreneurship does not determine the overall climate in small business. To date, the contribution of small innovative enterprises to the economy of the country was 5.9% in 2015, while in Russia it was 9.1%, in leading foreign countries – 50%.

4. Results

Based on the results of the conducted studies of the main indicators of innovative activity of enterprises on all types of innovations, the regions of Kazakhstan are differentiated as follows. The most active regions are shown in Figure 5.

In Kazakhstan, however, the low level of innovative activity in industry is the main reason for the small share of high-tech exports in the total volume of exports of industrial products. While one of the most important tasks of any state is to increase the innovation activity primarily of industrial enterprises (Dzhusibalieva, 2011; Nauryzbayev, 2013).

In Kazakhstan, however, there is no entrepreneurial approach to innovation. In fact, in practice, the priority is set for imitation schemes for the development of certain innovations, which leads to the implementation of the "catch-up development"

scenario of Kazakhstan (2012) (Sagieva and Zhuparova, 2012; Ibraimkulov, 2012; Sabirov, 2012). That is why the state resorts to certain investment investments to create conditions for the functioning of innovative enterprises (Goldstein, 1998).

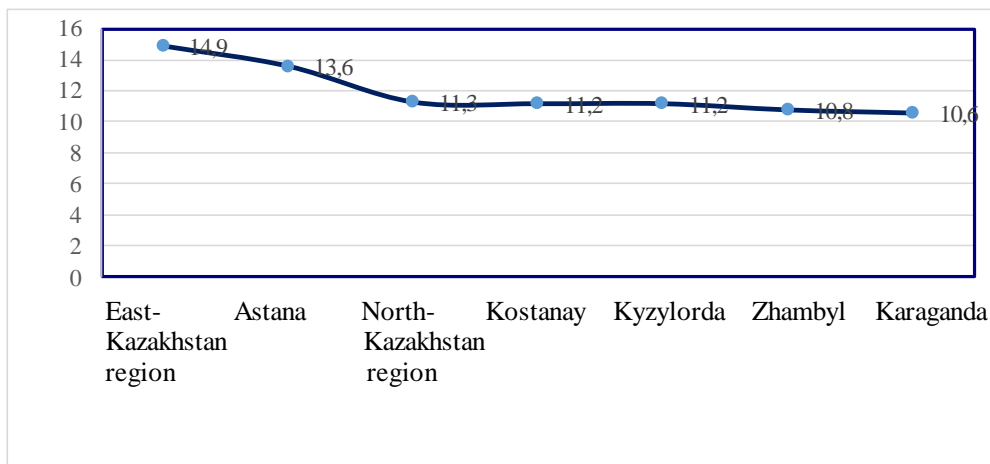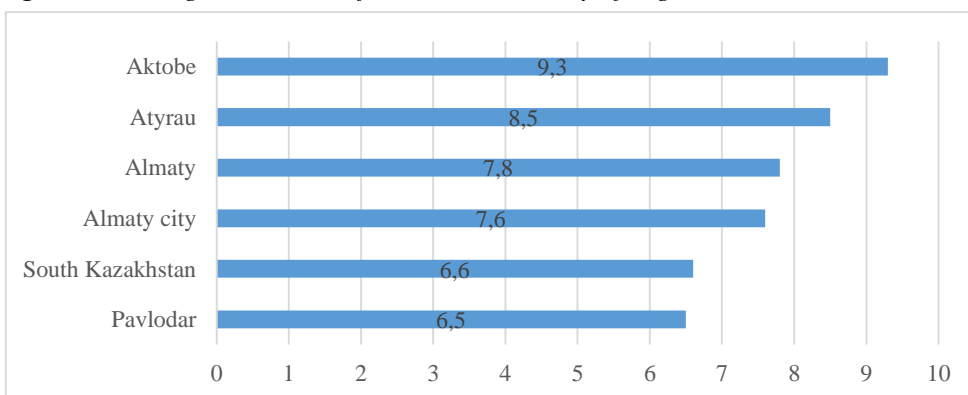**Figure 5.** *Maximum indicators of innovation activity of regions, %*

Figure 6 shows the regions with the average value of innovation activity.

Figure 6. *Average indicators of innovation activity of regions, %*


The most vulnerable in terms of indicators are two regions: West Kazakhstan (3.6%) and Mangistau (4.1%) (Figure 7).

A significant amount of investment is directed to fixed assets and only within 1% – to R & D, patents, licenses. In fact, investments in fixed assets represent capital investments in the creation and reproduction of fixed assets, a considerable portion of which (almost half) is the cost of construction (Yankovsky, 2006). We can assume that investments in equipment, tools and inventory are sent to innovative-

active enterprises. But if we take into account the small expenses for research and development (0.5-0.6%), then this assumption can be abandoned. When considering the structure of internal costs for research and development by sources of funding. A significant share of costs is covered by budgetary funds – 50% for the republic (18% for WK) and customer funds – 30% (81%). In addition, budgetary allocations for the maintenance of higher education institutions and the means of public sector organizations are included in the budget. In third place are the own funds of scientific organizations – 18% (0.3%).

Figure 7. *Minimum indicators of innovation activity in regions, %*
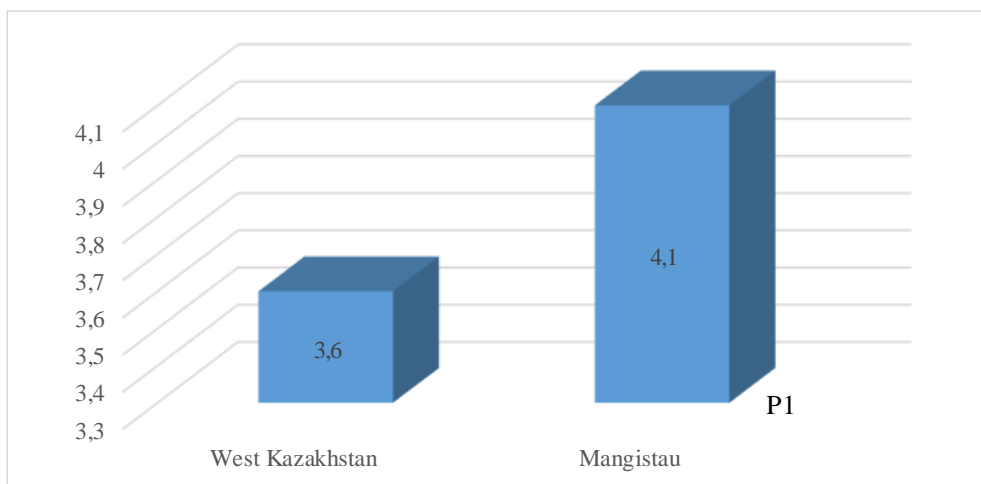
Thus, internal costs include not only the own funds of organizations, but also budget funds. Insufficiency of investments in innovative activity could not but affect the number of organizations performing research and development, and personnel engaged in research and development.

The main problem of the innovation policy of Kazakhstan is the weak domestic demand for innovation. The relatively low level of competition and specialization in traditional sectors at low rates of technical progress explains the lack of interest of companies in innovation (Carlsson *et al.,* 2002; Berkhout and Van Der Duin, 2007).

5. Conclusion

Development of competitive advantages of the economy of the Republic of Kazakhstan in the context of strategic planning can only be achieved through the introduction of an innovative economy. Modern innovative economy as a fundamental development base forms a national policy, the basis of which is the genesis of innovation. Innovative systems of competitive countries of the world, for all their differences, are one thing: the process of genesis and implementation of innovations in these countries has high indicators of effectiveness and efficiency.

The innovative strategy of enterprises is to form priority directions for the development of innovation activity, and only on the basis of the adopted strategy it is expedient to develop a scenario of innovative development of enterprises, which is the basis of innovation policy. The company's innovative strategy should: establish priorities for the development of innovative activities; determine the plan of concrete actions for managing the development of innovation activities at enterprises; take into account the innovation policy of the state; to coordinate with the development strategies of the industry; establish "rules of the game" for the joint work of structural divisions enterprises.

The lack of strategies and scenarios for innovative development at enterprises substantially differentiates their desire for growth and efficiency, which in turn lead to the emergence of contradictions and a decrease in the innovative activity of economic entities and the industry as a whole.

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