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## Innovative activity of small and medium-sized enterprises in Kazakhstan and factors of its development

### Abstract

Today, there is a need to shift from the export-oriented economic model to innovative economics in Kazakhstan. According to innovation indices, the State is significantly lagging behind other developed countries. The Republic of Kazakhstan can become competitive by shifting to a new model of economic growth and by rapidly reducing the backlog. The State needs an effective strategy for growth through innovation by implementing the development of commercial innovation.

In this paper, the authors conduct a statistical analysis of indicators of innovative growth in the Republic of Kazakhstan. The indicators were compared to those of technologically advanced countries, in particular to indices, such as the share of innovation-active enterprises, domestic spending on research and development (percentage to GDP), total researchers equivalent per one thousand of the working population and the amount of researches conducted. As a result of the present study, the authors have determined the key factors that have a major influence on the innovative activity of SMEs.

**Keywords:** Innovations; Innovative Activities; Small and Medium-sized Enterprises; Republic of Kazakhstan

**JEL classification:** M13; O32

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### Інноваційна активність підприємств малого та середнього бізнесу в Казахстані та фактори її розвитку

#### Анотація

Необхідність переходу Казахстану з експортно-сировинної моделі розвитку економіки на інноваційну не підлягає сумніву. На сьогоднішній день країна значно відстає від розвинутих країн світу і ряду країн, що розвиваються за цілою низкою критеріїв інноваційного розвитку. Республіка Казахстан зможе стати конкурентоспроможною тільки за умови переходу на нову модель розвитку економіки та швидкому скороченню відставання. Державі потрібна ефективна стратегія інноваційного розвитку, яка полягає перш за все в стимулюванні розробки та комерціалізації інновацій.

У статті наведено аналіз статистичних індикаторів розвитку інновацій у Республіці Казахстан порівняно з провідними технологічно розвиненими країнами світу, зокрема за показниками, такими як частка інноваційно активних підприємств, обсяг внутрішніх витрат на дослідження та розробки (частка у ВВП), кількість дослідників на одну тисячу зайнятого населення, кількість дослідників. Визначено ключові фактори, що впливають на можливості малих і середніх підприємств щодо здійснення інноваційної діяльності.

**Ключові слова:** інновації; інноваційна діяльність; малі та середні підприємства; Республіка Казахстан.

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**Инновационная активность предприятий малого и среднего бизнеса в Казахстане и факторы ее развития****Аннотация**

Необходимость перехода Казахстана с экспортно-сырьевой модели развития экономики на инновационную не подлежит сомнению. На сегодняшний день страна значительно отстает от развитых и ряда развивающихся стран мира по целому ряду критериев инновационного развития. Республика Казахстан сможет стать конкурентоспособной только при условии перехода на новую модель развития экономики и быстром сокращении отставания. Государству требуется эффективная стратегия инновационного развития, заключающаяся, прежде всего, в стимулировании разработки и коммерциализации инноваций.

В статье приведен анализ статистических индикаторов развития инноваций в Республике Казахстан в сравнении с ведущими технологически развитыми странами мира, в частности по таким показателям, как доля инновационно активных предприятий, объем внутренних затрат на исследования и разработки (доля в ВВП), количество исследователей на одну тысячу занятого населения, численность исследователей. Определены ключевые факторы, оказывающие влияние на возможности малых и средних предприятий по осуществлению инновационной деятельности.

**Ключевые слова:** инновации; инновационная деятельность; малые и средние предприятия; Республика Казахстан.

**1. Introduction**

Based on the classification by the World Bank, Kazakhstan is an upper-middle income country, with its GDP per capita equal to approximately USD 13,000 in 2014 (24,205 USD based on the purchasing power parity in 2014) [1]. Kazakhstan is a big country with a small population. It is a country rich in resources with huge reserves of oil, gas, minerals and nonferrous metals. The country has shown such a sustainable growth in mining oil and gas condensate in the past decade that by 2020 Kazakhstan can become one of the leading suppliers of hydrocarbon. Due to major direct foreign investments into the mining sector, an increase in the volumes of export of raw materials and import of equipment has improved economic transparency. In 2013, the ratio of exported goods (percentage of GDP) reached 38.25% [1]. The oil and gas export comprises 60-70% of Kazakhstan's total exports [2].

The collapse of the Soviet Union was later followed by a sharp decline in the volumes of production which led to economic instability. Nevertheless, for the past decade Kazakhstan has shown very good economic performance: the annual growth rate of GDP averaged 10% in the period of 2000-2007. The growth stopped in 2008 due to the negative impact of the world economic crisis on external financing and decreasing raw material prices. After a sharp decline in 2008, the economy had recovered only by 2014 when GDP increased by 4.3%.

In 2015, low oil prices and hard terms of accessing finance lead to a 1.1% fall in the GDP again, which creates geopolitical tension.

The mining of raw materials has given an impulse to the growth of Kazakhstan's economy. As a result, the government has stressed on the necessity to develop other dimensions of growth and gain an economic competitive advantage. As a solution to the problem of enlarging the dimensions of economic activities, recourses are given in order to modernise the economy and reconstruct the infrastructure.

Nowadays, the share of innovation-active enterprises of all enterprises in Kazakhstan is equal to 8.1%. In comparison, such shares make up to 50% in the USA, while Germany (79.3%), Sweden (60%), Finland (58%) have the highest shares among the EU countries. The average share of innovation-active enterprises in the European Union is around 53% [3].

In Kazakhstan, innovation activity of all enterprises of the real economy remains very low. Innovative entrepreneurship doesn't define the overall economic climate relevant to SMEs: in 2014, the contribution of SMEs to the economy made up to 1.5% [4].

Currently, the economy of the Republic of Kazakhstan is showing an unstable economic growth and is still oriented on

the mining industry. This restricts transformation to a new quality level of economic development and implementation of innovative reforms in the economy to gain a competitive advantage and slows down positive structural changes. In times of economic stagnation caused by fluctuations on the raw materials markets, further integration of economic reforms makes it possible to turn Kazakhstan into a competitive and innovative economy. In order to realise these opportunities, it is important to set innovation goals, formulate institutional terms and mobilise the innovative potential for a successful transformation.

**2. Brief Literature Review**

Many economists and practitioners focus their attention on the scientific support of innovation management in the economic and social spheres. Individual theoretical and practical aspects are considered in the works by Bianchi et al. (2010) [5], Rothwell and Dodgson (1991) [6], Acs et al. (1997) [7], Edwards et al. (2005) [8], Jenkins (2009) [9], Cakar and Erturk (2010) [10] and others.

Krasikova et al. (2014) [11], Kurmanov et al. (2015) [12], Yeleussov et al. (2015) [13] have made a great contribution to the theory of innovation within the changing paradigm of higher education.

Kazakh scientists, among whom are Dana (2010) [14], Radošević and Myrzakhmet (2009) [15], Smirnova (2013) [16], also try to determine factors that impact the innovative activity of SMEs. However, a significant number of scientific issues related to the effective state management of innovative processes within the economy remain outstanding in the context of Kazakhstan.

**3. The purpose** of the study is to determine key factors that have a major influence on the innovative activity of SMEs in Kazakhstan.

**Methodology**

This Research was done to measure the variation of the economic development and innovation in Kazakhstan in times of increasing global competition. In order to assess the key factors which have an impact on the innovation activity of SMEs, the authors used statistical data provided by the Committee on Statistics of the Ministry of National Economy of the Republic of Kazakhstan. The results of the research were derived from: the sample group analysis of 24,068 SMEs in 2014 and 8,022 SMEs in 2004 SMEs holding their activities in the Republic of Kazakhstan, statistical data, expert's opinion on the innovation potential of the State.

**4. Results**

Since the beginning of industrial and innovative development in 2003, Kazakhstan had reached the peak of its main innovation activity indicators by 2014. The growth was caused mainly due to successful realisation of the State Program for

Accelerated Industrial Innovative Development of the Republic of Kazakhstan in 2014.

In the same year, the share of innovation-active enterprises increased from 3.4% to 8.1%, if compared to 2005 (Figure 1).

In comparison, the shares of innovation-active enterprises make up to 50% in the USA, while Germany (79.3%), Sweden (60%), Finland (58%) have highest shares among the EU countries. The average share of innovation-active enterprises in the European Union is around 53% (Figure 2) [3].

Research and development expenses are one of the main indicators of innovation activities. The USA (USD 415 billion), China (USD 208.2 billion), Japan (USD 146.5 billion), Germany (USD 93.1 billion ) are the leaders by this indicator (Figure 3).

It is necessary to mention a quick growth of research and development expenses in China. Compared to 2008, this indicator has increased by 1.7 times. Kazakhstan is lagging behind technologically developed countries on the scale of research and development expenses. However, compared to 2011, the growth of expenses on research and development (61.7 billion KZT) was 42.5% in 2013 [3].

The largest shares of research and development expenses in GDP have Israel (4.38% of GDP), South Korea (4.03%), Finland (3.78%) and Japan (3.39%).

It is necessary to mention that according to the Europe 2020 Strategy, increasing expenses on research and development in the European Union (EU), up to 3% of GDP, is one of the five general target indicators. In 2011, the average indicator in the EU was 1.94%, which was higher than in China (1.84%). Among the other European countries, Finland has one of the highest indicators (3.78%). The Indicator of research and development expenses of GDP in Kazakhstan is still low and comprises 0.17%. However, it is necessary to mention that the local science system is at the start of its development.

According to number of researches performed by R&D, Kazakhstan is lagging behind many foreign countries (Figure 4).

According to the number of total researches per one thousand of the working population, Finland exceeds Kazakhstan by 12.2 times, while South Korea - by 9 times and Singapore - by 8 times.

Nevertheless, according to the local statistical data of 2013, this index has increased by 59.5% (up to 17,195 people), if compared to 2008.

It should be noted that the innovation development in Kazakhstan is restrained by the lack of personnel, capable to manage innovation processes and projects. Despite positive statistics in the scientific sector, science staff in Kazakhstan requires effective State support and additional stimulation.

Low involvement of SMEs in Kazakhstan in the implementation of innovations urges the need to determine the relevant factors and take measures to develop innovation-active processes at SMEs.

Table 1 contains data on evaluating factors affecting innovation activities in the period of 2004-2014.

10-year data demonstrate changes in SMEs opinions related to factors influencing SMEs opportunities in carrying out innovation activities.

According to the obtained data, the most critical factors detected by enterprises were the lack of financial resources and the shortage of competent personnel. These two factors were

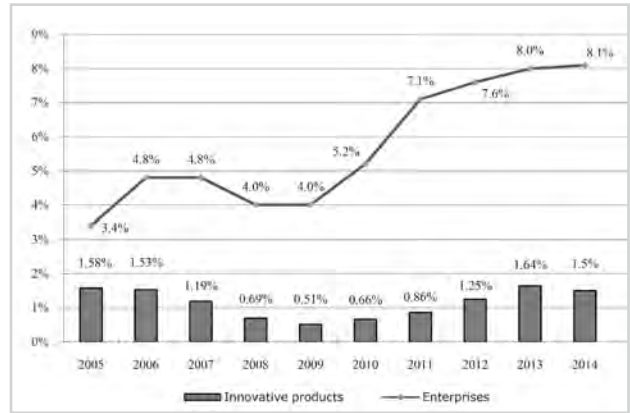


Fig. 1: Innovation activity of Kazakh enterprises (share of innovative products in GDP, and share of innovation-led enterprises of the total number of enterprises) Source: [4]

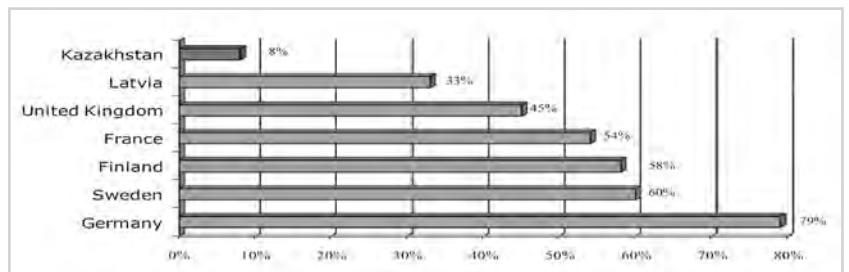


Fig. 2: Innovation activity of Kazakhstan partnerships and foreign countries, 2013 Source: [3]

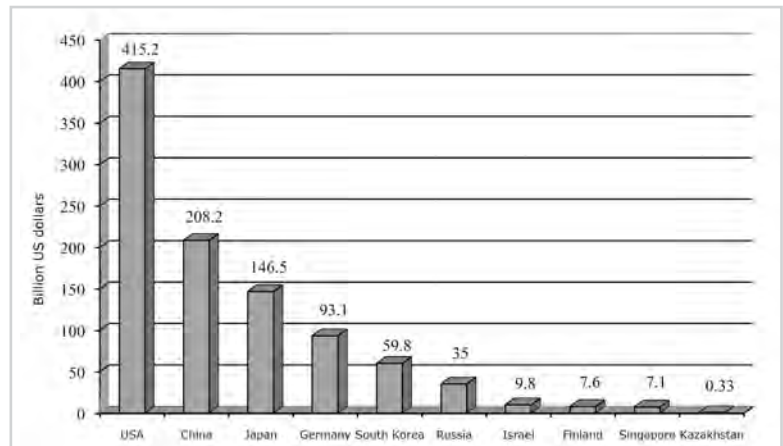


Fig. 3: Research and development expenses in billion USD, 2013 Source: [3]

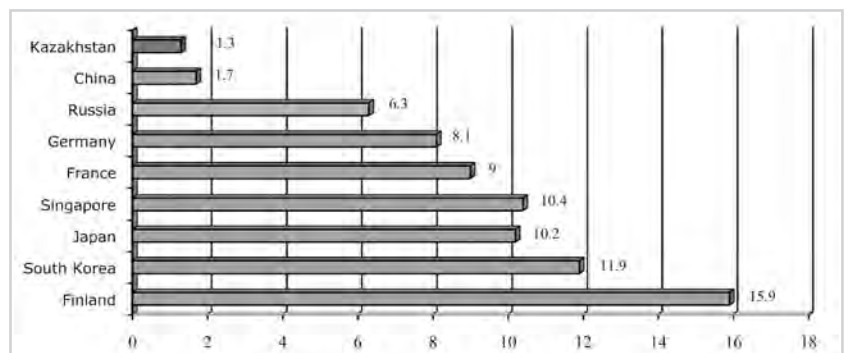


Fig. 4: Percentage of total researchers per one thousand of the working population per country, 2013 Source: [3]



Tab. 1: Factors affecting innovation activities, in % of total number of enterprises

Factors affecting innovation activities	2004	2014
Low innovative potential of the enterprise including the shortage of financial assets and competent personnel	21.8%	41.4%
Shortage of financial assets from external financing resources	27.2%	3.2%
Innovations are regarded unnecessary due to the lack of demand in innovations	10.4%	34%
Innovations are regarded unnecessary due to earlier innovations	18.8%	6.9%
Lack of information on technologies and markets	14%	1.7%
High economic risk	20.2%	9.9%

Source: Calculated by the authors based on [4]

mentioned by 41.4% of the surveyed SMEs in 2014 and by 21.9% SMEs in 2004.

In 2004, SMEs were highly dissatisfied with loan funds. In 2004, 27.2% of respondents mentioned high interest rates of loan funds. However, in 2014, only 3.2% of the surveyed SMEs emphasised the shortage of financial assets, restricting innovation activity.

High economic risks related to the implementation of innovations were determined as one of the significant factors (in 2004 - 9.9%, in 2014 - 20.2%).

The following matters for innovation led by SMEs are essential: they find it unnecessary to implement innovation due to the lack of demand for innovations (with 34% in 2014 contrary to 10.4% in 2004) and earlier innovations (with 6.9% in 2014 as opposed to 18.8% in 2004).

Another crucial matter was the lack of information on new technologies, and undeveloped corporate communications. Such problems were highlighted by 1.7% of SMEs in 2014 compared to 14% of SMEs in 2004.

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