THE DEVELOPMENT OF HUMAN POTENTIAL IN KAZAKHSTAN’S INNOVATION ECONOMY

Talgat Uteubayev¹
Mariana Mateeva Petrova²

Abstract: In this paper, statistical analysis of indicators of innovative growth in the Republic of Kazakhstan was conducted. The indicators were compared to those of technologically advanced countries, in particular to such indices as: the share of innovation-active enterprises, domestic spending on research and development (Percentage to GDP), total researchers equivalent per thousand total employment, and amount of research conducted. As the results of the academic research, key factors that have a major influence on innovative activity of the SME were determined.

Purpose – disclose the nature and content of the human factor of the economy in terms of becoming an innovative society, to examine the role of the human factor in the innovative development of the state.

Methodology - Research was composed to measure variation in the economic development and innovation in Kazakhstan required in times of increasing global competition.

Conclusions - Today, the State is significantly lagging behind other developed countries according to innovation driven indices. The Republic of Kazakhstan can be competitive by shifting to a new model of economic growth and by rapidly reducing lag. The State requires an effective strategy of innovative development, which consists primarily in the development of human potential and employment of citizens. Integration of education, science and industry, the development of education on the

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basis of modern science and technology have become today one of the priority directions of economic development.

Keywords: human resources, labour potential, innovation, innovative development, the republic of Kazakhstan.

JEL: M10, M12, M16, L20.

1. Introduction

The rapid development of technology, the liberalization of the global markets and the ever-growing competition, shape the need to adapt the organization to new circumstances. This requires adaptation of the internal structures, processes and outputs, so that the organization can respond to the constantly altering environmental conditions. A key component to the success of the business today is the strive for continuous sophistication, the search for ways to improve efficiency and gain a competitive advantage. (Petrova, Tepavicharova, Boykova, 2017).

The issue of evaluating the productive capacity and human potential of the whole society is one of the unsolved questions of the economic theory. The power of the concept of human capital, both theoretically and practically, is adjacent to the lack of tools and indicators to measure it. Very important is the role in these processes efficient management of human resources (Buzko et al, 2016).

The need to solve this issue is becoming more obvious and is dictated by the urgent need of solving global economic problems faced by humanity in the transition to a new stage of civilization, called the emergence of an information society, a knowledge-based economy or a new economy.

The post-industrial economy has significantly changed the attitude of the factors of production.

When the industrial economy’s efforts have been concentrated on the production of equipment, in the post-industrial era the main positions in the system of social values is held by the production of intellectual products by high technology and the accelerated pace of technological renovation, both in the goods and service sectors.
In the varying business environment - dynamic and sometimes not
determined, the competitive advantage of economic subject is crucial. The
theme of the added value that brings intellectual capital is being discussed
more often in public. (Petrova et al., 2016)

Thus, there is a worldwide trend in economic development based
on the quality of human resources at their disposal. Quality indicators of
human resources increasingly influence the basic parameters of social and
economic development (Emilova, 2017).

Human potential is a complex economic category and has
qualitative and quantitative characteristics. At various times many
scientists, economists suggested using a variety of approaches and
methods for its measurement.

2. Methods

The research methodology is based on the processing of
secondary data that makes it possible to conduct a preliminary analysis of
the problems.

In order to evaluate key factors, which have an influence on
innovation activity of SME, Committee on Statistics of MNE RK statistical
data was used. Results of research were derived from:

The sample group analysis of 31,784 SMEs in 2015 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.

3. Results and discussion

3.1 Factors of developing innovation of economy

From the moment of following industrial-innovative development in
2003, Kazakhstan had reached a peak of the main innovation activity
indicators in 2014. Positive growth was caused mainly by successful
realization of “The state program for accelerated industrial innovative development of Republic of Kazakhstan” in 2014.

In 2015 in relation to 2005, shares of innovation active enterprises had increased from 3,4% to 8,1% (Figure 1).

![Figure 1. Innovation activity of Kazakhstan enterprises](http://stat.gov.kz)

**Figure 1. Innovation activity of Kazakhstan enterprises (share of innovative products in GDP, and share of innovation led enterprises among all enterprises)**

To draw comparison: in USA shares of innovation active enterprises make up to 50%; among the European Union countries highest shares have Germany (79.3. %), Sweden (60%), Finland (58%). Medium share of innovation active enterprises in the European union compiles around 53% (Kurmanov et al., 2016).

Research and development expenses are one of the main indicators of innovation activities. Leaders of this indicator are USA (415 billion USD), China (208,2 billion USD), Japan (146,5 billion USD), Germany (93,1 billion US dollars).

It is necessary to mention the 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 growth of expenses on research and
development in 2013 (61.7 billion KZT) was 42.5% (Kurmanov et al.,
2016).

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

It is necessary to mention, that according to European Strategy
2020, one of the five general target indicators is the increasing expenses
on research and development in the European Union (EU), up to 3% of
GDP. In 2011 the average indicator in the EU was 1.94%, which is higher
than China (1.84%). Among the other European countries, Finland has
one of the highest indicators (3.78%). Indicator of research and
development expenses of GDP in Kazakhstan is still low - 0.17%.
However, it is necessary to mention that local science system is in the
beginning of future development (Kurmanov et al., 2016).

Analysing the number of total researches per thousand total
employments Finland exceeds Kazakhstan by 12.2 times, South Korea by
9 times, Singapore by 8 times.

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

Therefore, innovation development in Kazakhstan as well as other
factors is restrained by personnel deficiency, the capability to manage
innovation processes and projects. Despite positive statistics in the
scientific sector, science staff in Kazakhstan requires effective State
support and additional stimulation.

Little activity of SMEs in Kazakhstan in implementing innovation
urges the importance of determining factors of low activity and implement
actions of developing innovation active processes in SMEs (Kurmanov et
al., 2016A).

Figure 2 contains data on evaluating factors affecting innovation
activities in the period of 2004 to 2015.
Data of the 11-year period demonstrates change of SMEs opinions on factors, influencing SMEs opportunities in carrying out innovation activities.

According to the enterprisers the most critical factors were: lack of financial resources, and competent personnel. These two factors were mentioned by 37.5% of questioned SMEs in 2015 and 21.9% SMEs in 2004.

Source: Authors calculations according to data of Committee on Statistics of MNE of the RK

Figure 2. Factors affecting innovation activities, in % from total number of enterprises
In 2004 SMEs were highly dissatisfied with loan funds. In 2004, 27.2% of respondents mentioned high interest to borrowed capital. However, in 2015, only 1.0% of questioned SMEs, selected the shortage of financial assets, restricting innovation activity.

High economical risks of implementing innovations were selected as one of the significant factors (in 2015 - 4.0%, in 2004 - 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 (in 2015 - 34.2%, in 2004 - 10.4%), and due on earlier innovations (in 2015 - 6.2%, in 2004 - 18.8%) (Kurmanov et al., 2015).

Another critical matter was the lack of information on new technologies, and undeveloped corporate communications. 0.3% in 2015 and 14% in 2004 of SMEs have stated these problems.

3.2. The current state and human capital development trends in the Republic of Kazakhstan

According to UNDP reports on human development for 2008-2012, there is a positive trend in the human capital development, as evidenced by the human development index/human potential development index.

It is important to note that in 2008 Kazakhstan was in the group of countries with average human development (Malik, 2013).

Since 2009 Kazakhstan has moved to the group of high level Human Development Index/Human Potential Development Index, successfully maintaining its position through 2012. Table 1 below shows the data on the Human Development Index/Human Potential Development Index and its components for 2008-2012. It should be mentioned that in drawing up the Human Development ranking of countries, UNDP experts were not always guided by the actual data (National Agency for Technological Development, 2013).
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Table 1
Human Development Index/ Human Potential Development Index and its components (2008-2012)

<table>
<thead>
<tr>
<th>Components</th>
<th>Human Potential Development Index (HPDI)</th>
<th>Human Development Index (HDI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2008</td>
<td>2009</td>
</tr>
<tr>
<td>HDI (in the HDI ranking of countries)</td>
<td>0.794</td>
<td>0.804</td>
</tr>
<tr>
<td></td>
<td>(73 out of 177)</td>
<td>(82 out of 182)</td>
</tr>
<tr>
<td>Life Time Index at birth (life expectancy)</td>
<td>0.682</td>
<td>0.666</td>
</tr>
<tr>
<td></td>
<td>(65.94)</td>
<td>(64.95)</td>
</tr>
<tr>
<td>Education Index:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sub-index 1</td>
<td>0.973</td>
<td>0.965</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Literacy Level of Adult population</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average education duration</td>
<td>99.5</td>
<td>99.6</td>
</tr>
<tr>
<td>Sub-index 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The overall figure of students in educational institutions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expected Education duration</td>
<td>93.8</td>
<td>91.4</td>
</tr>
<tr>
<td>3. A decent standard of living</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Index</td>
<td>GDP/GNI</td>
<td>GDP per capita in USD per PPP</td>
</tr>
<tr>
<td>4 Prepared according to data for Y2005</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Prepared according to data for Y2007</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

So, for example, in the preparation of a HPDI ranking for 2007-2008 they used life expectancy data of the 2005 ranking for 2009 - data as of 2007.

According to the latest UNDP human development report 2013 entitled “The Rise of the South: Human Progress in a Diverse World”, in
2012 Kazakhstan ranked 69th in the Human Development Index; this index corresponds to the group of countries with high human development.

The report was presented to the director of the UNDP Regional Centre in Bratislava Adam Oliver.

According to the report, in the most countries in the group with the high HDI there is a steady increase in the index for the period since 2000. Kazakhstan, Algeria, Iran, Venezuela and Cuba have demonstrated the highest increase in the HDI for the 12-year period in the group of countries with a high index (Malik, 2013).

Between 1995 and 2012, Kazakhstan's score rose from 0.642 to 0.754.

UNDP experts note that Kazakhstan shows one of the highest HDI growth rates in the region - an average of 1.1 percent within the past 10 years (Yeleussov et al., 2015).

Other Central Asian countries ranked as follows: Turkmenistan – 102nd, Uzbekistan - 114th place, Kyrgyzstan and Tajikistan - 125th place.

“The Rise of the South” is dramatically changing the world’s aspect in the XXI century. At the same time, developing countries are driving economic growth, drawing hundreds of millions of people out of the poverty depth and inducing billions of others in the ranks of the global middle class.

One of the major achievements in the field of development in the countries of Asia, Africa and Latin America is a large-scale reduction of poverty and the increasing the middle-class number.

Studying the main trends in the development of Kazakhstan in conjunction with the global Human Development Index of UNDP: “The Human Development Index of Kazakhstan for 2011” is estimated at 0.745 and qualifies Kazakhstan as the country in the group of high human development - 68th place among 187 countries and territories.

In comparison with the revised data for 2010 Kazakhstan's rating improved by one point.

During the period from 1995 to 2011, Kazakhstan's HDI rose from 0.636 to 0.745, or by 17%, an annual increase made up about 1%.

Considering the progress of Kazakhstan for the period since 1995, we can highlight the progress in terms of life expectancy at birth, which increased by 3.1 years.
The average number of schooling years increased by 1.6 years and the expected schooling period increased by 3.2 years. Kazakhstan's GNI per capita increased 2.4 times”.

Globally, the report notes that global revenue growth is associated with the deterioration of key indicators such as greenhouse gas emissions, soil and water quality”.

Despite the positive trends in the Central Asian region, the countries are still dependent on fossil fuels by using energy inefficiently and demonstrating a high level of air pollution (Yeleussov et al., 2015).

These effects increase inequality, influencing adversely people that are already in the disadvantaged group, and the inequality in human development, in turn, increases the ecological degradation.

Outstanding progress in human development, which occurred in recent decades, could not continue without major decisive steps to reduce environmental risks and inequality.

The Report identified ways of further actions to achieve environmental sustainability and the equality of opportunity in such a way that they reinforce each other.

4. Conclusion

The conducted analysis has shown a very low innovation activity of small and medium-sized enterprises in Kazakhstan compared to other countries. In general, for EU (28 countries) R&D expenditure share in GDP increased by 16.67% from 2005 (Labunska et al., 2017).

Business communities shall recognize that companies’ ability to implement innovations can be a powerful trigger to competitive advantage and process effectiveness, which are so important for small companies which have the understanding that research and development expenses are investments into future development. Methodical basis for this may be the procedure for determining the value of intellectual property. (Labunska et al., 2017).

It is important to note that all factors determined in this paper were also listed by other researchers and experts, which only confirms the
importance of the relevant issue. Low innovative activity of SMEs together with growth factors must be re-evaluated by the government. The implementation of effective financial mechanism, training and development of personnel, amendments to laws and regulations, development of small and medium-sized enterprises are impossible without institutional changes with regard to not only innovation-led enterprises but also to businesses in general.

Human capital has all the properties and indicators of intensive development factor, but there are some problems with the precise measurement of its cost and performance.

These problems are connected with the vagueness of the definition of multi element, compound and complex human capital itself, as well as with the dependence of its quality and, accordingly, the performance on many parameters and indicators that can characterize one or another country.

Moreover, there are ethical problems with using fully the concept of “capital”, as it relates to a person, people and a nation. The economic category of “human capital” inevitably leads to a strong separation of peoples and nations by the main indicator - the efficiency and quality of human capital.

However, the human development index (HDI) widely used by the international institutions of the United Nations dramatically eliminates these differences.

Being a combination of indexes of longevity, education and income, the HDI allows more adequate and comprehensive consideration of the development.

The index takes into account the most important parameters of human well-being.

Directly or indirectly, such characteristics as health and longevity, the environment, the level of culture, education and income levels are taken into account through the index.

All these components are documented and are suitable for cross-country comparisons.

The HDI is the integrated socio-economic indicator which is constantly being improved by experts of UNDP.
The main management resource is not financial resources and other conventional resources, but the intelligence of professors, teachers, young scientists with entrepreneurial talent and leadership qualities. This is the way the corporate culture of the university generates human capital, the development of which determines the knowledge economy.

Higher education plays an important role in the training of competent and competitive specialists for all branches of the national economy and in the integration of science and production.

To increase the efficiency of human capital and to create an innovation economy at the level of advanced countries, it is necessary to achieve:

- very high level and quality human capital and high investments in its growth and development;
- high level and quality of life;
- high level HPDI and economic freedom;
- high level development of basic science;
- high level development of applied sciences;
- availability of powerful intellectual centres of technological development in the country;
- high proportion of the sector of the new economy;
- powerful synergetic effect in all spheres of human intellectual activity;
- advanced and effective innovation and venture systems supported by the state;
- an attractive investment climate and a high level of investment ratings;
- a favourable business and tax climate;
- diversified economy and industry;
- competitive products in the global technology markets;
- an effective state regulation of the country’s development;
- transnational corporations ensuring the competitive technological and scientific development of the country;
- low level of inflation (less than 3-5%).

The integration of education, science and industry, the development of post-graduate education based on modern scientific and technology
advances are today one of the priority fields of economic development. There are other methods for analysing the quality of human resources (Buzko et al., 2016) that will be used in my future research.

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