Education as a Factor Influencing the Development of National Economy

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Abstract

Nowadays the dynamics of economic development is no longer determined exclusively by traditional resources, such as natural wealth, capital, classical industrial and agricultural branches, but increasingly by human resources, high-quality education and high-technology industries. The high-tech component has become a crucial source of competitiveness and value added in practically all the branches of the national economy. At the same time, enterprises focusing on high technologies and application of high technologies in enterprises of traditional industries can develop only in an innovations-friendly economic environment supporting innovative efforts, i.e., in a country that consistently implements a national policy for developing innovations and has an effectively operating national innovation system. Jurenoks and Turlais (2005) showed that innovation plays a significant role in the international competitiveness of nations. The main drivers of innovation performance cover 3 innovation dimensions: human resources, open, excellent and attractive research systems as well as finance and support. Education, human knowledge and skills as human capital have now become a key factor in economic development because of modern knowledge economy. A level of human capital characterises not only a human being but also the society as a
whole, influencing its development and progress. Education and science are major directions of application of material and intellectual resources to ensure economic, social and cultural development of a particular country. Investments in human capital are education, health care, professional training and other activities that make people more productive economically. Investing in education is a determining factor of human capital development, therefore, a very important education system in the context of lifelong learning. A high level of education promotes creating of innovative technologies and new knowledges. Consequently, the national and regional development is closely linked with the ability to create, retain and attract human capital, which in turn is related to the quality of national education and lifelong learning opportunities. The time has come for a major change in the strategy of education system, for finding a broader and dynamic conception of the qualitative aspects of educational development, which is an engine of innovation activity in any society and any country.

In the paper, the process of innovation development in Denmark has been compared with the same processes in the Baltic States due to similar traditions and people’s way of life in Denmark with a population of 5,635,574 (as of 17 January 2015) and an area of 42,915.7 km² (Denmark population clock).

The aim of research is to analyse and compare the changes in the development of innovative activity in the European Union in general and Denmark in particular being one of the leaders of innovation performance in the EU and Baltic States (Latvia, Lithuania and Estonia) for the period of 2005–2014, as well as investigate the relationships among human resources, development of innovations (SII) and economic development (GDP) of countries.

**Keywords:** Innovations, development of national economy, human resources, education.
Introduction

Development of innovation activity is a determinative factor of economic development of any state. In each country, the strategic plan of innovative development of economy is carried out. There is a need not only to determine the existing situation in the development of innovative processes in certain countries, but also to reveal the general regularities (vectors) of development of these processes.

The indicators of the European Innovation Scoreboard (EIS) summarise the main elements of innovation performance. The measurement framework used in the Innovation Union Scoreboard distinguishes among 3 main types of indicators and 8 innovation dimensions, capturing in total 25 different indicators (see Table 1).

Table 1. Measurement Framework of the Innovation Union Scoreboard

<table>
<thead>
<tr>
<th>No.</th>
<th>Groups of innovation indicators</th>
<th>Subgroups in the group</th>
<th>Number of indicators in the subgroup</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Enablers</td>
<td>Human resources</td>
<td>1. New doctorate graduates</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Population aged 30-34 with tertiary education</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. Youth with at least upper secondary education</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Open, excellent, attractive research systems</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Finance and support</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Firm activities</td>
<td>Firm investments</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Linkages &amp; entrepreneurship</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Intellectual assets</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>Output</td>
<td>Innovators</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Economic effect</td>
<td>5</td>
</tr>
</tbody>
</table>

One of the subgroups in the group of innovation indicators is human resources. The economic prosperity and functioning of a nation depend on its physical and human resources. Human resources and human capital represent the investment people make in themselves that enhances their economic productivity.

Innovative activity of the European Union member states is measured through the SII (Summary Innovation Index). National policies (Innovation policy in Europe) can support innovation by continually reforming and updating the regulatory and institutional framework within which an innovative activity takes place. However, there is a question: why in some countries the development of innovations happens more quickly and effectively than in other countries? Does it mean that the governments of some countries incorrectly
choose ways of the development of regional economy? Are there any general laws of the development of innovative economy for all counties? How to reveal the lack in the course of introduction of innovations in real economy and how to make use of experience of the advanced countries in the development of innovative processes in certain countries? Answers to these questions can be received investigating the development of innovative processes in particular countries, revealing the general tendencies of development of innovative processes in different countries, and examining the interrelation between the SII growth and its influence on gross domestic product in the European Union. The object of the research is the economy of Latvia and tendencies of the development of innovative process as well as the economic development of Latvia in the period of 2005–2014.

**Human Resources**

The development of human resources and human capital is dependent on the public interest to invest in its development. By investing more and more resources in human capital development, national economic growth is also stimulated. It is important to find ways how to attract people to the country, to keep them stay and find resources in which to make investments, to develop their own human resources and enhance competitiveness among other countries.

The analysis of human capital in the EU member states is carried out on the basis of significant indices: Human Development Index (HDI) and European Human Capital Index (HCI). The situation in the field of human capital in the EU member states can be illustrated by the indices used by the United Nations to make international comparisons in respect of social development. The HDI is a strategic element in the new approach. It symbolizes the shift in thinking, even if not fully capturing the richness of human development. Human capital development is shown by the HDI, determining the position of the country among other countries of the world, taking into account the average future life expectancy of the population, education, and income.

Table 2 shows the HDI trends for Denmark, Greece and the Baltic States in 1980–2014.
To determine the impact of human resources and human capital on the national competitiveness, it is important to consider the relationship among human capital valuation indices, country's innovation activity (SII indicator) and economic growth (GDP).

Figure 1 shows the HDI dynamics in Denmark, Latvia, Estonia and Lithuania for the period of 1990–2014.
The HDI shows the economic and social impact of human potential development on the life expectancy, education and income. Economic growth is highly dependent on synergies of new knowledge and human capital. Figure 1 shows the growth of HDI for the period of 1990–2014. The analysis of HDI dynamics demonstrates that saturation of this index takes place. For all countries under consideration (Denmark, Latvia, Estonia and Lithuania), growth rates are synchronous; however, Figure 1 shows a significant gap in the level of an index between one of the EU leaders (Denmark) and the Baltic States. It should be noted that growth of an index is closely related to the level of education of the population within a country.

Therefore, increased spending on education and training is accompanied by progress of technological knowledge in all countries that have reached significant economic growth.

Education

Any society is divided into age groups, within which individuals fulfill different social roles based on the age and the experiences amassed with regard to particular social realia. There is a relatively well-established system of relationships among these age groups, which are manifested in the wide scope of social processes. Unfortunately, the studies of lifelong learning in Latvia have disclosed education terminology gaps, which hamper the understanding of the system of classification of education adopted in Latvia. Major problems are related to the term “adult education”. According to the Central Statistical Board of the Republic of Latvia, adult education is a versatile process, which ensures personality development and competitiveness of an individual in the labour market over the entire lifespan of a person (LR law “On Education”, LR Saeima
(the Parliament of the Republic of Latvia), 29 October 1998). This definition is far too general, since the Central Statistical Board here refers only to the data on informal education, vocational education and further education, ignoring formal education.

Figure 2 shows that it is possible to differentiate among various stages of lifelong education.

**Figure 2. Division of Lifelong Learning by Stages**

Let us consider the second higher education as one of the forms of adult education. The necessity to acquire the second higher education is determined by a number of factors: interest in a particular field of science, the necessity to develop professional competence and raise quality of person’s social life. The factors motivating adults to repeatedly undertake studies in the system of higher education are as follows:

1. private business activities;
2. career growth possibilities;
3. current job responsibilities;
4. special interest.

Figure 3 demonstrates the division of lifelong learning in Latvia for the period of 2008–2013.
To flexibly respond to the situation in Latvia at the end of the 20th century, Latvian higher education establishments started to offer special study programmes targeted at persons with a prior higher education. Kamola and Nespors (2012) analyzed significance of innovations and education for sustainable development of Latvia. In 2000, the Faculty of Engineering Economics of Riga Technical University offered an opportunity to obtain a second higher education in the area of entrepreneurship economics and management. At first, there were only 11 applicants and only 4 graduates. In the following years, the number of applicants for studies to acquire the second higher education notably increased. Therefore, on 24 February 2003, the Division of Continuing Education (DCE) under the Faculty of Engineering Economics and Management (FEEM) was established. The DCE incorporated and implemented all second higher education programmes offered by the FEEM. In such a way, the RTU FEEM provided an opportunity for students without economic education to undertake Bachelor studies in economics or entrepreneurship and management. These further education programmes have become very popular (in 2003/2004 there were 54 applicants, in 2004/2005 – 80; in 2005/2006 – 110; in 2013/2014 – 336). Currently, there are 372 students at the Division of Continuing Education in programmes of second higher education: “Economics”, “Entrepreneurship and Management” and “Human Resource Management”. The mode of studies is part-time correspondence studies with an increased number of contact hours (56% of the scope of full-time studies); studies are organised only on Saturdays since all students work and arrive to classes from all regions of Latvia.

The applicants are students with educational background in humanities, exact and natural sciences, as well as engineering sciences (see Figure 4).

Figure 4 shows the changes in the structure of education in Latvia in 2008 and 2013. The number of students majoring in engineering sciences and service engineering has increased. At the same time, the number of the students majoring in social sciences has reduced. It is explained by an increase of
technological effectiveness of production, introduction of modern technological processes and innovative technologies in the production process.

**Figure 4. The Structure of Education in Latvia in 2008 and 2013**

Nowadays, it is possible to speak about transformation of borders between different stages in a person’s life – with the tendency for the border of young age to be shifted forward, owing to the possibility of lifelong learning. At the same time, the need for higher education can be stimulated not only by different external socio-economic and political factors, but also by internal motivation and needs, the main of them being:

- need for self-expression in both general and professional sphere of competence;
- need for increasing self-respect and self-assessment;
- increased awareness of education as a valuable asset.

In Latvia, people with higher education participate in adult education activities more actively. In total 11% of people with higher education were involved in adult education activities in 2013. People with primary education are the least active ones, as only 2.7% of them participate in lifelong learning activities. Women participate in lifelong learning activities more actively than men. Their participation rate is 7.8%, while for men it is only 5%.

**Application of Benchmarking in Research of Economic Systems**

As it is known (Effective Benchmarking) benchmarking should not be considered a one-off exercise. To be effective, it must become an ongoing, integral part of an ongoing improvement process with the goal of keeping abreast of ever-improving best practice. Application of benchmarking in investigation process involves four key steps:
1. The process of investigation of economic systems using benchmarking and index method should be based on:

- an explicit set of categories or an organizing framework that links vision and goals to indicators and assessment criteria;
- a limited number of key issues for analysis;
- a limited number of indicators or indicator combinations to provide a clearer signal of progress;
- standardizing measurement wherever possible to permit comparison;
- comparing indicator values to targets.

2. It is important to link investigation goals to movements of a small number of indicators. Single indicators can rarely be linked to any specific sustainability goal.

3. Linking the use of deterministic and qualitative modeling approaches is a useful means for projecting indicators and discerning important interdependences between factors. Indicator modeling work is most suited for identifying main linkages and implications on large systems. Modelling efforts should focus on such general policy-related tasks.

4. Greater focus is required on modelling frameworks that can use incomplete data sets or qualitative information.

    Tendencies of change of parameters (indices) of one system (in a separate cluster) can be accepted at best as an example for development of other systems entering the given cluster.

    In our case, the feature of application of benchmarking in research of tendencies of development of economic systems involves the analysis of rates of change and interdependence between the indices of HDI, SII and GDP for the leader of European Union (Denmark) and for the Baltic States. The analysis of tendencies of the above-mentioned indices allows revealing and comparing the nature of changes in the levels of these indicators for Denmark and the Baltic States.

    Figure 5 shows the algorithm of the application of benchmarking in research of economic systems.
Determine which functional areas within your operation are to be benchmarked
Identify the key factors and variables with which to measure investigated object
Select the example for each area to be benchmarked

Measure the performance of the example for each benchmark being considered
Measure investigated object performance for each variable and begin comparing the results to determine the gap between investigated object and the examples

Specify actions to enhance those areas that show potential for development

Is it possible to realize planned actions?

Yes

Implement programs and actions for achieving planned target

No

Is planned target achieved?

No

Yes

Monitoring process to management investigated object development

**Figure 5. Algorithm of Realization of Benchmarking Process**
The practical implementation of algorithm of benchmarking needs a constant and systematic control system for the correction of decision-making process and strategic planning of development of innovation activities in the EU member states. Each EU member state has the relevant departments that carry out statistical monitoring of these processes, analyse the received information and implement the plans following the strategy.

The Relationship between Innovative Human Resources (Hdi), Development of Innovations (Sii) and Economic Development (Gdp)

The Innovation Union Scoreboard provides a comparative assessment of the innovation performance of the EU member states and the relative strengths and weaknesses of their research and innovation systems. The Innovation Union Scoreboard uses the most recent statistics from Eurostat and other internationally recognised sources as available at the time of analysis. International sources have been used wherever possible in order to improve comparability between countries. The Summary Innovation Index gives an “at-a-glance” overview of aggregate national innovation performance. Figure 6 shows the EU member state innovation performance in 2005 (European Innovation Scoreboard (2005)). The EU member state innovation performance is shown by the SII on the vertical axis against the short-run trend performance of the SII on the horizontal axis. This creates four quadrants: countries above both the average EU-28 trend and the average EU-28 SII are moving ahead, countries below the average SII but with an above average trend performance are catching up, countries with a below average SII and a below average trend are falling further behind, and countries with an above average SII and a below average trend are losing momentum.

Figure 6. The EU Member State Innovation Performance in 2005
The circles in Figure 6 identify the four main country groupings: top = leading countries, middle = average performers, bottom right = catching up, and bottom left = losing ground. Innovation leaders: Sweden, Denmark, Germany, Finland, all show a performance well above that of the EU average. Figure 7 shows the EU member state innovation performance in 2014 (Innovation Union Scoreboard (2014)).

**Figure 7. The EU Member State Innovation Performance in 2014**

Comparing the data in Figure 7 with that in Figure 6, we can make the conclusion about the preservation of structure of country groups according to the innovation performance of the EU countries. At the same time, it is possible to make the conclusion about the growth of innovation performance in Estonia in relation to Latvia and Lithuania.

**Figure 8. The SII Dynamics for Denmark, Latvia, Estonia and Lithuania, 2006–2013**
Figure 8 shows the positive tendency of the SII growth. Growth rates of the specified countries are synchronous. At the same time, Figure 8 shows a significant gap in the SII level for the leader of the EU (Denmark) and for the Baltic States. Figure 9 shows the average growth rate of SII of the EU member states in 2005 (a) and in 2014 (b).

**Figure 9. Average Growth Rate of SII of the EU Member States in 2005 (a) and 2014 (b)**

Information provided in Figure 9 shows that the average growth rate of SII in Latvia increased from 2.8% in 2005 to 3.51% in 2014. In Lithuania, the growth of this indicator also increased from 1.5% in 2005 to 2.58% in 2014. A growth rate of innovative activity in Estonia slowed down. In 2005, the average growth rate of SII in Estonia was about 8%. In 2014 the level of this indicator reduced to 3.74%.

Let us consider in more detail one of the most topical issues – the impact of human resources (HDI), innovations measured by means of indicators on the changes in the basic economic indicator – GDP.

Figure 10 shows the SII and HDI relationship of the EU member states in 2005 (a) and in 2014 (b).

**Figure 10. SII and HDI Relationship of the EU Member States in 2005 (a) and 2014 (b)**

Figures 10 (a) and 10 (b) show a positive dependence of SII and HDI parameters. Thus, in comparison with 2005, there was an increase in the
growth rate from 3.526 in 2005 to 4.07 in 2014. The data provided in Figures 10 (a) and 10 (b) show a minor change in the structure of arrangement of the countries according to the level of innovation performance and the level of growth rates of HDI.

Figure 11 shows the relationship between GDP per capita (PPS) and HDI of the EU member states in 2005 (a) and 2014 (b).

**Figure 11. Relationship between GDP per Capita (PPS) and HDI of the EU Member States in 2005(a) and 2014(b)**

![Figure 11](image)

Figures 11 (a) and 11 (b) show some decrease in the rate of dependence of GDP per capita (PPS) and HDI relationship of the EU member states. In 2005, the rate of dependence was 685.03 but in 2014 the rate of dependence was 637.95. Thus, value of the determination coefficient ($R^2$) in 2005 was 0.8537 but in 2014 the value of the determination coefficient ($R^2$) increased to 0.8667. The structure of an arrangement of the countries (see Figures 11 (a) and 11 (b)) according to the values of GDP per capita (PPS) and HDI changed slightly.

Jurenoks et al. (2013) analysed dynamics of the index of the innovation and it’s influence on gross domestic product of Latvia. Figure 12 shows the relationship between the SII and GDP per capita of the EU member states in 2005 (a) and in 2014 (b).
As Figures 12 (a) and 12 (b) demonstrate, there is a positive relationship between the SII and GDP per capita for the EU member states in 2005 (a) and 2014 (b). The analysis of data provided by Figures 12 (a) and 12 (b) shows some reduction in the rate of relationship of GDP per capita and SII from 173.99 in 2005 to 146.36 in 2014.

Figure 12 (b) shows the reduction of dispersion according to the regression line.

Figure 13 demonstrates the relationship between the SII and GDP per capita of the EU member states in 2005 (a) and 2014 (b).

Figures 13 (a) and 13 (b) show a higher growth rate of GDP per capita in comparison with that of SII for the EU member states. There is a positive link between the SII and GDP per capita.
Overall Innovation Performance in the EU in General, Denmark and the Baltic States in Particular

The main idea of the Sustainable Development Strategy of Latvia until 2030 invites to satisfy the needs of the present generation, balancing public welfare and environmental and economic development interests and concurrently ensuring the observation of the environmental requirements and the preservation of natural diversity in order to avoid the reduction of possibilities to satisfy the needs of future generations. Figure 14 shows the GDP dynamics for the period of 2003–2014 (Economic development of Latvia. Report of Ministry of Economics (2014)).

Figure 14. GDP Dynamics in the Period of 2003–2014

In Figure 14, a strong similarity of dynamics of change in GDP for the Baltic States can be recognized. At the same time, Figure 14 also demonstrates the strong difference of GDP of the Baltic States from the leader of the EU (Denmark). The analysis of the data provided by Figure 14 allows making a conclusion about a higher positive growth of GDP in the Baltic States in comparison with Denmark.

Figure 15 reflects the changes in the SII and GDP in Latvia according to the scenario of the economic development of Latvia for the period of 2007–2020. The development scenario forecasts are based on the possible fluctuations of external and domestic demand depending on several factors.
Jurenoks and Jansons (2006) showed that reforms accomplished in Latvia and integration in the European Union have created a positive impact on the economic development of the country. In order to improve economic development in Latvia the economic model should be changed.

In most cases, the creation and distribution of innovations are not a result of one particularly talented individual – more and more people get involved in the process; thus, a crucial precondition of success is the ability to co-operate, openness, knowledge and creative activity. Consumers of services and products become also involved in the creation of innovations with different skills, knowledge and world view. Mass creative activity as an instrument described by Jurenoks and Didenko (2006) means that creative abilities, knowledge and ideas of any inhabitant of Latvia should be used in the creation and distribution of diverse innovations. It will be possible only if culture is oriented towards greater co-operation, as well as new platforms promoting co-operation are offered in the innovation policy, state administration, education and culture.

Figure 16 shows the dynamics of human resource indicators of the EU member states (EU27) in general, Denmark and the Baltic States in particular for the period of 2005–2014.

The indicators of human resources are: (a) higher education; (b) new doctorate graduates; (c) youth with the level of upper secondary education.

Figure 16 (a) shows a rather good level of higher education in the Baltic States in comparison with the average level of this indicator in the EU.

As can be seen from Figure 16 (b), there is an increase in the number of doctoral candidates in Latvia in comparison with previous years. The level of the parameter (new doctorate graduates) in Latvia is lower than that of the same parameter in the EU and in Denmark.

Figure 16 (c) shows that the level of parameter (youth with upper secondary education) in the Baltic States is higher than that of the same parameter in the EU and in Denmark.
Figure 16. Dynamics of Human Resource Indicators of the EU Member States (EU27), Denmark and the Baltic States for the Period of 2005–2014

Figure 17 shows the dynamics of open, excellent, attractive research system indicators of the EU Member States (EU27), Denmark and the Baltic States for the period of 2005–2014.

Figure 17. Dynamics of Open, Excellent, Attractive Research System Indicators of the EU27, Denmark and the Baltic States for the period of 2010–2014; (a) international scientific co-publications; (b) scientific publications among the top 10% of most cited ones

Figure 17 (a) shows that the indicator of international scientific publications in Latvia is in the lowermost position in the EU. Growth rates of this indicator are much lower than the growth rate of this indicator for
Denmark. Growth rates of this indicator are rather close to rates of its growth for the EU.

Figure 17 (b) shows that the level of parameter (scientific publications among the top 10% of most cited ones) in the Baltic States is lower than the level of the same parameter in the EU and Denmark.

Nowadays innovation is not attributed only to high technologies, but also to the creation and introduction of new ideas in every field of activities, so it becomes more important that the competitiveness of countries involves an increasingly large number of inhabitants in the process of creative activity.

Figure 18 shows the tendency of growth rate of SII of the EU member states in 2005 (a) and 2014 (b).

**Figure 18. Tendency of SII growth rate of the EU member states in 2005 (a) and 2014 (b)**

Figures 18 (a) and 18 (b) show that the structure of an arrangement of Baltic States according to the values of SII growth rate has changed positively.

Economic system with higher social mobility also means higher creativity of the society because each capable, creative person even from the lower classes of the society has an opportunity to create and prove his or her ideas. Thus, under present conditions not the countries with the lowest wages, but the countries with the highest equality of possibilities are most successful because they are able to ensure creative activities for as large number of inhabitants as possible.

**Elasticity of Innovation**

Table 3 summarizes the regression results for the four simple linear regressions between GDP per capita and the SII.
Table 3. Regression Results between GDP per Capita and SII

<table>
<thead>
<tr>
<th></th>
<th>Constant</th>
<th>Coefficient SII</th>
<th>Adjusted R2</th>
</tr>
</thead>
<tbody>
<tr>
<td>No dummy</td>
<td>5725</td>
<td>38725*</td>
<td>0.638</td>
</tr>
<tr>
<td>dummy</td>
<td>21843</td>
<td>10599*</td>
<td>0.791</td>
</tr>
</tbody>
</table>

* Coefficients are significant at the 1%-level/5%-level.

Coefficient $b$ for the SII from the regressions can be used as a proxy for the elasticity of the SII on GDP per capita.

\[
f(x) = a + bx,
\]

\[
\frac{x \cdot b}{a + b \cdot x} = \frac{b}{a} \cdot x - \frac{b^2}{a^2} \cdot x^2 + O(x^3),
\]

\[
Ef(x) = \frac{x \cdot f'(x)}{f(x)} = \frac{x \cdot b}{a + bx} \approx \frac{b}{a} \cdot x.
\]

We can conclude that there is a proportional dependence between the coefficient of the elasticity of the SII on GDP per capita and coefficient $b$.

An increase of 0.01 point in the SII would lead to an increase in GDP per capita of about 100 to 400 EUR. However, this result should be interpreted with care, as it is highly dependent on the number of countries included (adding Luxembourg would raise elasticity) and the use of the country dummy. The regression without a dummy gives an elasticity almost 4 times as high as the regression including a dummy. The strong positive dependence of SII and GDP value allows forecasting the SII in Latvia with respect to the growth rate of the Latvian GDP. The analysis of previous information shows a low rate of the variability of the indicators of elasticity and allows making a conclusion about the use of these indicators for the analysis of the relationship between GDP per capita and SII.

Conclusion

The indicators of the European Innovation Scoreboard (EIS) summarise the main elements of innovation performance. Revealing the correlation dependence between a parameter describing a level of development of human resources (HDI), a parameter of innovation development of the state (Summary Innovation Index (SII)) and a parameter of the national economic development (Gross Domestic Product (GDP)) is topical. The existing relationships among human resources (HDI), innovations (SII) and development of economy (GDP) are significant for evaluating the process of national economic development in every country. The research shows that the most important drivers of innovation changes in economy are education and human resources.
Interdependence between the SII development and economic development has been investigated by using scenario modelling described by Jurenoks, Didenko and Jansons (2009). Scenario modelling has been implemented combining the SII data with GDP per capita and forecasted by the Ministry of Economics of the Republic of Latvia of rates of growth GDP for the period till 2020. Due to the EU system of innovation indices and estimations of GDP, the opportunity of revealing the dependence between the SII and GDP value becomes possible. The analysis of the existing level of human resources and parameter SII, describing the level of development of innovational activity of the state, and also the analysis of rates of change in the SII necessary for achievement the national plans on raising the GDP level, will allow revealing deviations in the rates of SII development (really achieved and determined on the basis of the allocated correlation dependence between the SII and GDP) as well as revealing the reasons that cause given deviations. Good example for Latvia is the Danish model of development of human resource activities, which draws the attention towards innovation and economy development.

The information obtained as a result of the analysis will allow correcting in due time an innovation policy of the state, removing the reasons causing a deviation in the really achieved and forecasted values of parameter SII, and providing a necessary level of economic development (GDP) owing to the growth of innovational activity.

References

