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COUNTRY'S COMPETITIVENESS AND SUSTAINABILITY: HIGHER EDUCATION IMPACT

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Abstract. The development of human resources is an important condition for ensuring the sustainability of the society and the development of the national economy. Knowledge is becoming more and more one of the basic factors for society sustainability and development. In the 21st century economy, which is based on knowledge, the innovation becomes one of the major factors to increase the competitiveness. It is confirmed by the experience of leading economic systems when investing considerable resources in the society educating. It is especially important for the Baltic States in the context of the creation of the knowledge based society declared in the EU space. Thus one of the basic aims of the Latvian economy policy is to create efficient, competitive and sustainable economy. One of the basic priorities of an up-to-date state development strategy is a modern education and science system as the education level and the development of human capital are the most important indicators that are creating the competitiveness and sustainability of the country. In the article there are considered the global tendencies of the higher education; also the connection of education with innovation and sustainability are analysed. The aim of this study is to focus on sustainable competitiveness concept and provide in-depth understanding of higher education impact on ensuring sustainable competitiveness on national level. In the research there are used primarily quantitative comparative research methods. Quantitative indicators are used to characterize specific features of the higher education impact on economics in the Baltics and Nordics. For the calculations, methodology and definitions the OECD methodology and World Economic Forum, global competitiveness concept is used.

Keywords: higher education, sustainability, innovations, competitiveness, Global competitiveness index.

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1. Introduction

The development of knowledge-based society and sustainable economy considerably depends on the ability to produce competitive goods and services and to distribute them in the global market. And vice versa the improvement of the higher education is promoted in order to ensure sustainable development and competitiveness of the country and its regions. Global economical activity changes fast and heavily impresses the competitive possibilities of developing countries; it is not easy to achieve and to save competitiveness. It is not enough only to be passively opened for the free market. The experience presents evidence that inquiring the competitive sources is possible only for technologically developed companies, which can get into the world manufacture system. Qualitative and fast mastering of new knowledge, piling and applying became the main source of the countries, regions and the businessmen's competitiveness factors.

Knowledge creation and dissemination, as well as innovation, are keys to promotion of competitiveness. Economists working on growth theory and/or human capital development have showed two important, strongly

related phenomena. First, knowledge, which is embedded in human capital and created by research, has become as important means of production as labour and capital. (Aghion, 2006) Access to skilled people and research are issues of particular importance for small and medium-sized enterprises in order to ensure their ability to become globally competitive and thus to enable them to grow. (Hedin, 2009) Innovation, which is drown more or less successfully from knowledge and the changes it implies, is the engine of the growth. (University Research.. 2009, p.40*)* Second, innovation is indispensable for country the closer the country is to the „technology and organizational frontier" (Aghion 2006). Indeed, less-advanced countries can still improve their productivity by adopting existing technologies or making incremental improvements in other areas, for those that have reached the innovation-driven stage of development, this is no longer sufficient to increase productivity. (The Global Competitiveness Report 2011). In other words, scientific progress and education (especially higher education) are the best sources of new solutions to contribute to prosperity; however, it is necessary, but not sufficient condition for further progress, because potential advances have to be correctly implemented by business leaders and governments.

2. Competitiveness and sustainability

The World Economic Forum defines competitiveness as the set of institutions, policies and factors that determine the level of country productivity. The concept thus involves 12 pillars of competitiveness, including the innovation, higher education, and training. (The Global Competitiveness Report, 2014). Throughout the second half of the 20th century, data showed that increasing productivity and economic growth went hand in hand with better and improving living conditions. The ranking of the global competitiveness index is an important source of information about the economic situation of countries; it uses a unified system to reveal the strengths and weaknesses of every country in the field of competitiveness.

Since 2011, the Forum has embarked on a major effort to deepen understanding of how sustainability relates to competitiveness and what this means for the development path of economies, resulting in a conceptual analysis and the calculation of the sustainability-adjusted global competitiveness index. The sustainable competitiveness index is a composite indicator which measures the drivers of long-term competitiveness. The central idea is to measure how sustainable is the productivity level of an economy with respect to environmental stewardship and social sustainability. Sustainable competiveness implies achieving competitiveness gains today without compromising future competitiveness. Sustainable competitiveness is the set of institutions, policies and factors that make a nation remain productive over the longer term while ensuring social and environmental sustainability. (The Global Competitiveness Report 2014)

The social sustainability is the set of institutions, policies and factors that enable all members of society to experience the best possible health, participation and security; and to maximize their potential to contribute to and benefit from the economic prosperity of the country in which they live. (The Global Competitiveness Report 2011)

For social sustainability, the Forum identifies three conceptual elements:
- access to basic necessities: access to sanitation, access to improved drinking water, accessibility of healthcare services;
- vulnerability to economic exclusion: extent of informal economy, social safety net protection, vulnerable employment;
- social cohesion: income Gini coefficient, youth unemployment, social mobility.

Sustainable competitiveness requires a number of elements: the basic structures (infrastructure, and the maintenance of infrastructure), business environment, and last but not least, quality education and R&D capabilities, which are directly or implicitly interrelated with education outputs.

One of the key developments in the policy space over the past decade has been the advancement of concepts related to environmental sustainability and more recently inclusive growth. Such conceptual schemes comprise

social, economic, and environmental components of sustainability, and they provide an intellectual basis for societies around the world to coalesce around the principles of sustained and universal levels of prosperity. Although the attainment of a certain level of economic prosperity is essential for achieving high standards of living, within this exercise, countries are assessed also for their ability to generate this long-lasting prosperity for their citizens in a sustainable way. In other words, competitiveness is a necessary but not sufficient condition for continued prosperity – hence the need for the additional social sustainability-adjusted and environmental sustainability-adjusted measures of competitiveness.

Despite financial and structural challenges, Scandic countries continue to feature prominently among the most competitive economies in the world. All of them are among the top 20 in global competitiveness index**:** Finland (4th), Sweden (10th), Norway (11th), Denmark (13th). All of Scandic countries are in 3rd stage of development: innovation-driven economies (see table 1). However, Europe is also a region with significant disparities in competitiveness, with several countries from the region significantly lower in the rankings (Shwab, 2013).

In spite of Baltics is in transition stage to innovation driven economy, Estonia remains the best performing country in Eastern Europe reach 29th overall. The country boasts a solid competitiveness profile with an excellent educational system (20th), as well as a strong commitment to advancing technological readiness (29th). In opposition competitiveness performance of Lithuania and Latvia is evaluating by 48th and 52nd place within 144 countries. Similar situation is in the Sustainability-adjusted GCI list of all Scandic countries. It should be emphasized that countries in this region have high social sustainability component value and it has growing tendency. For instance social sustainability – adjusted GCI in Norway is 6.43 points, Finland – 6.38, in Latvia – 4,64, but with stable value (-5%-+5%). (see Table 1)

Table 1. Indices of competitiveness, social sustainability competitiveness components

Country	Global competitiveness index (GCI) 2014-2015 rank	Global competitiveness index (GCI) 2014-2015 value	Stage of development	Social sustainability pillar (GCI) 2011-2012 Rank*	Sustainability-adjusted GCI 2014-2015 value
Norway	11	5.50	innovation driven	1	6.18
Sweden	10	5.41	innovation driven	14	6.00
Finland	4	5.35	innovation driven	7	6.28
Denmark	13	2.29	innovation driven	5	5.91
Estonia	29	4.71	transition to innovation driven	26	4.92
Lithuania	41	4.51	transition to innovation driven	29	4.75
Latvia	42	4.50	transition to innovation driven	24	4.77

Source: Shwab, 2014;

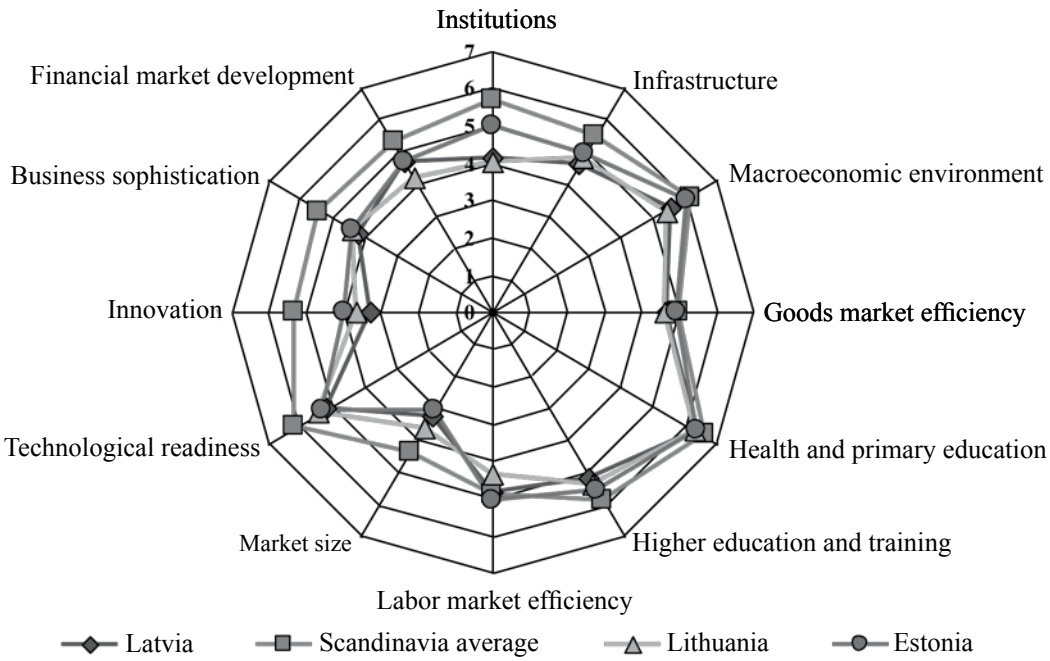
*This is the score obtained by multiplying the GCI score by the social sustainability coefficient.

The latest available data (2014) show that among 144 countries the competitiveness of Latvia's higher education is placed in the 31st position (Estonia – 20th place, Lithuania – 26th place). Scandic countries, in turn, according to this indicator, are stable among top 20, similarly as according to GCI indicator. Global competitiveness index structure shows that Denmark also continues to receive a first-rate assessment for its higher education and training system (10th), which has provided the Danish workforce with the skills needed to adapt rapidly to a changing environment and has laid the ground for high levels of technological adoption and innovation. A continued strong focus on education would help to reverse the downward trend in the country's ranking and to maintain the skill levels needed to provide the basis for sustained innovation-led growth.

Finland, which performed consistently well on the components of the global competitiveness index, shows that, biggest competitiveness strength lies in its capacity to innovate, where the country leads the world rankings (1st). Very high public and private investments in R&D (3rd), with very strong linkages between higher education and industry (1st) coupled with an excellent education and training system (1st) and one of the highest levels of technological readiness (11th) drive outstanding result.

Sweden (10th) has a rather stable competitiveness profile across all areas. Due to strong focus on education over the years Sweden has developed a very sophisticated business culture (8th) and is one of the world's leading innovators (7th). Sweden has managed to create the right set of conditions for innovation and unsurprisingly scores very high in many of the dimensions that are key to creating a knowledge-based society. More precisely, the Swedish education and training system (14th) is of high quality and seems to deliver the right set of skills for an innovation-based economy; ICT adoption (3rd) is among the highest in the world; and, in terms of innovation capacity (7th), firms are among the best performing. In addition, the country has also formed highly competitive markets (17th), which produce the right set of incentives to quickly transform those knowledge assets into new products and services with higher value-added (see figure 1.).

Fig.1. Comparison of the indicators of the Global Competitiveness Index among selected countries in 2014-2015.



Source: author created by Shwab, 2014.

Raising productivity and competitiveness is crucial to sustaining economic growth and enhancing prosperity in a country. The ninth pillar, innovation, is particularly important for countries that have reached the high-tech frontier, as it is the only self sustaining driver of growth. Also for the innovation index Latvia takes only the 70th position, while Lithuania and Estonia – 44th and 30th correspondingly. The innovation index in Finland is 5.78, in Sweden – 5.37, in the USA – 5.49, but in Latvia – only 3.27 points that is the lowest indicator among the neighbour countries. Innovations and the qualitative aspects of the business sophistication is the determining factor of the economic development for the creation and development of the knowledge-based economy. In Latvia the low level of cluster development (90th place), the low availability of scientists and engineers (106th place) as well as the low cooperation of higher educational institutions and branches in the field of research (63rd place), country capacity to retain (64th place) and attract (107th place) talent, quality of the education system (65th place) deserve particular attention.

3. Higher education and sustainable competitiveness

The importance higher education has concerning economic, social and cultural development is stressed by OECD (*Higher Education and Regions..,* 2007). In order for regions to be integrated into and competitive in the globalising knowledge economy, knowledge-intensive goods and services have to be produced. Here access to new technologies, knowledge and skills are considered essential. The world practice shows that the increasing distribution of the higher education is strongly related to the work productivity and the economy

competitiveness in general. Linking of knowledge with capital, technologies and manpower, their constantly increasing proportion in every product and activity create necessity for inhabitant education, knowledge and competences.

Education and training are emerging as key drivers of competitiveness. As the global economy has become more complex, it has become evident that to compete and maintain a presence in global markets it is essential to boost the human capital endowments of the labour force, whose members must have access to new knowledge, be constantly trained in new processes and in the operation of the latest technologies. The analysis of the pillars and factors determining the competitiveness in Latvia when compared to other Baltic and Scandic countries is carried out within the global competitiveness monitoring

The fundamentals for achieving sustained growth in transition economies to innovation-driven stage: education and training (5th pillar), technological readiness (9th pillar), business sophistication (11th pillar), innovation (12th pillar), including university-industry collaboration in R&D. Education has been a particularly important driver in the development of the capacity for technological innovation, as the experience of Finland, Korea, Taiwan, and Israel clearly shows.

Latvia and Lithuania lags behind the Scandic countries both by the rating of the higher education and by other indicators related to the education: innovations, level of technologies, and efficiency of the labour market. Similar situation is also with innovation and knowledge based economy indices. The World Bank evaluates the knowledge based economy (KEI) of Latvia being in the 32nd place, which is the lowest indicator among the Baltic countries, but the Nordic countries are leading in the field of knowledge based economy development (see Table 2.). Higher level of education promotes both fundamental innovations and adoption and imitation of the global *high-tech* practice. Still, Latvia does not use these possibilities.

Table 2. Indices of higher education, innovation and knowledge based economy in different countries

Country	Higher education and training pillar of GCI 2014-2015	Knowledge based economy index (KEI) 2012	Global innovation index (GII) 2013
Norway	**8**	5	16
Sweden	**14**	1	2
Finland	**1**	2	6
Denmark	**10**	3	9
Estonia	**20**	19	25
Lithuania	**26**	32	40
Latvia	**31**	37	33

Source: Shwab, 2014; Global Innovation Index.. 2013; Knowledge Economy Inex 2012.

The analysis of the interrelations of a country's competitiveness index with the economic development pillars makes it possible to identify the factors having the greatest influence on a country's competitiveness. In the global scale, higher education (0.93) and innovation (0.91) pillars have one the highest value of the correlation coefficients with the competitiveness index. The main differences are related, firstly, to the fact that the correlation coefficients with GCI for the 5th pillar (higher education) have decreased from 0.93 to 0.88 accordingly, which can be explained by the "saturation" effect – infrastructure and education are well developed and their minor changes have no major effect on competitiveness. (Hiļķevičs, Štefenberga, 2013) (see Table 2.)

Figure 2. shows the relationship between the GCI and the higher education and training pillar.

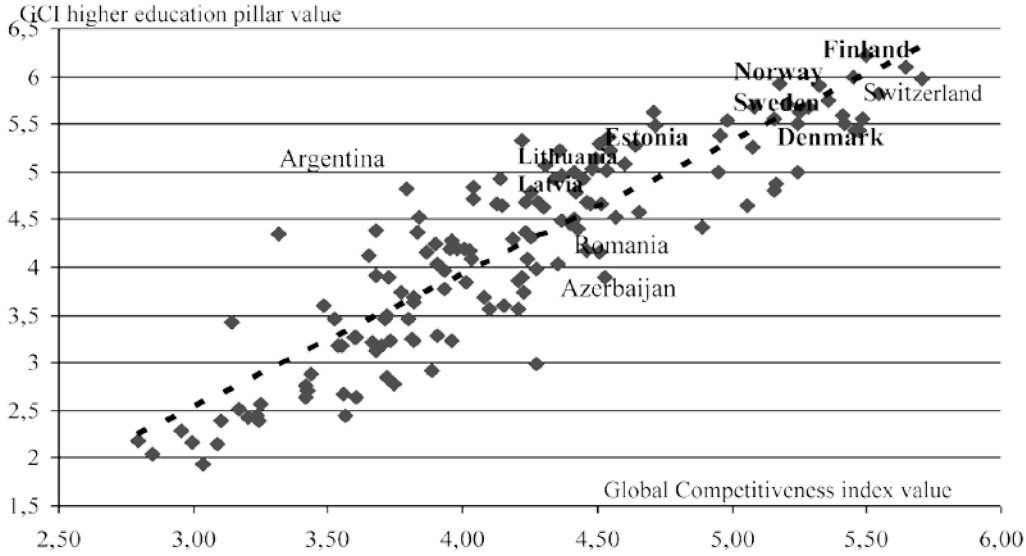


Fig.1. The Global Competitiveness index and higher education pillar interrelation

Source: author created by Shwab, 2014.

Such countries as Denmark, Sweden, Norway and Finland are consistently performing higher education reforms, constantly improving the efficiency stimuli both in the system in general and in its components. The most actual changes were directed to the improvement of the higher education: the structure of the resource investment indicators was improved, the system reorganization was conducted, the students' mobility is actively developing (stressing the importance of the mobility of outgoing students), also the systems of the higher education performance indicators are being improved (*Jermolajeva, Aleksejeva 2013)*. In this way the higher education of these countries have gradually ensured the competitiveness and sustainable development of the country what is confirmed by the leading positions in the global competitiveness index, global innovation index and other indicators. The reforms of the previous decade include the associations, integration, structural cooperation and creation of strategic alliances in Norway, Denmark, Finland and other European countries. Many of these processes had been initiated by the country.

When paying more detailed attention to the higher education system of Finland and examining its interrelations with processes of national economy, it can be concluded that, first, the economic policy of Finland was created on the basis of integration of different branches (Aho et al., 2006). The basis of the education system development is taken by mid-term political decisions that are based on stable state values: equality of education opportunities, general scope of secondary education, state-financed all-round education. This mid-term policy anticipates integration of education and vocational training systems, involvement of the private sector and manufacturing in the evaluation of the education system quality, in formulation of requirements and in monitoring (Salberg, 2006).

Secondly, the strategic framework of the education system development and reforming has a long-term character. Thirdly, the influence of the state administration and institutions has a significant role in the policy of the higher education and in the implementation of the education and economic reforms (Sahlberg, 2009). Efficient state administration and high development level of public institutions have a significant role in the creation and execution of the policy of society's subsystems as well as in the implementation of the changes planned. Fourthly, well-educated human resources and their wide involvement in continuous education guarantees reproduction and improvement of human capital that is necessary to ensure higher education services and economic growth. The most important changes in the higher education took place in the beginning of 90's of the 20th century when

the majority of state regulatory functions was cancelled but education opportunities and directions – widened (Aho, et al., 2006; Routti, Yla-Anttila, 2005). In the same way, the state regulatory influence in the private sector was diminished, as well as more flexible standards were introduced. It all together ensured the development of network interaction in the field of academia-*industry-government* (state and region)(Tvaronavičienė, et al. 2015; Branten, Purju 2015; Laužikas, et al. 2015;)

The integrated policy and the long-term state strategic planning ensured the Finnish higher education system took leading positions in the whole world as well as the country's competitiveness and successful development of the private sector. A constant dialogue between state and private higher educational institutions permitted to achieve mutual understanding about the anticipated results and factors of society and knowledge economy development. As the result, education institutions, too, are more actively involved in the introduction of experiments by using creative technologies, developing business skills and positive attitude of students towards work. Strong integrated policy frameworks and long-term strategic visions have enhanced sustainable leadership in education and private sector developments (Sahlberg, 2006)

Despite the comparatively high indicators of the higher education achievements, the higher education systems in the Scandic countries are still in the reforming process. The same is true about the Baltic countries where the higher education systems undergo intensive reforms since 1990's and whose performance is not so outstanding yet, but they continue to search for a better system management and governance mechanism and directions of the general system development (Čirjevskis 2015).

In terms of social sustainability Nordic countries also continue to perform well overall and display specific areas of improvement. Finland, despite an inclusive social system and a track record of managing resources responsibly, has to address a rather high level of youth unemployment (approximately 19%), depleting fish stocks, diminishing forest cover, and limited protected areas. Norway attains the strongest social sustainability performance of all the countries in the 144 country sample in 2014, balancing low inequality and social protection with high mobility and low level of unemployment. Social development factors encompass a range of investment in human development from healthcare to education, to protection of the environment to the effective management of urbanization. In terms of creating and sustaining wealth, nations need to provide jobs and income to their populations. Quality and availability of education in the past are an indication for today's R&D and innovation capabilities, and today's education performance reflect future innovation capabilities (Tvaronavičienė et al. 2015; Branten, Purju 2015; Matetskaya 2015). Strength and depth of R&D activities is the basis for the development of value-added technologies and services

Higher education institutions are now called upon for tasks that go far beyond their traditional teaching and research functions, such as regional engagement, innovation boosting, and, perhaps most significantly, collaboration with business (*Regions matter: economic recovery..,*). Functional linkage between higher education, industry and society is a prerequisite to sustainable development. Universities, with their triple role as providers of the highest level of education, advanced research and path-breaking innovation have the potential to be crucial drivers of Europe's ambition to be the world's leading knowledge-based economy and society. (COM, 2009)

Furthermore, higher education institutions at academia-*industry-government* interaction network have emerged as important power of changes that stimulates high and digital technologies and serves as the basis of intellectual capital for entrepreneurship. Social environment as well globalization, localization, glocalization processes more often influence competitiveness, not only in economic competitiveness level, but also in social sustainability effects. The concept of sustainable competiveness emphasizes very essential task of any innovation policy; together with innovations that facilitate competitiveness to provide sustainable development of the whole society not only in the context of economic growth, but also ecological and social sustainability (Laužikas et al. 2015; Oganisjana et al. 2015; Tunčikienė, Drejeris 2015). Thus, the emphasis should be placed on the role of creative society for providing sustainable competitiveness in the context of sustainable natural environment and international environment.

Conclusions

In this new economic context, higher education is becoming a crucial object of national policy. It forms an essential component of the knowledge economy and, therefore, is increasingly addressed by newly adopted national innovation policies. On the other hand, the macroeconomic policy, including social sustainability stimuli may provide considerable impulse for the development of higher education (demand-driven higher education) in different ways. For instance, when supporting the business sector and promoting the stability of the labour market, it is also possible to achieve the development of the higher education system, of course, it is a long-term activity, and vice versa – a highly developed higher education system with the help of synergy effect promotes the macroeconomic growth, providing balanced development of regions and increase of the country's sustainable competitiveness.

Knowledge transfer between universities and business will work best where there is a general framework of cooperation and mutual understanding, involving partnerships, joint projects and the exchange of people, respectively using social environment aspects. Thus competitiveness will be achieved; in turn, realization of higher education goals alongside with accomplishment of business tasks involves entrepreneurs into socially responsible action providing sustainable competitiveness.

Therefore it is very important to increase society's understanding about coherence between knowledge, skills and competences and development of knowledge based economy, as well as to advance the development of social infrastructure and sophistication of environmental aspects.

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