LEVEL OF INNOVATIVE EFFICIENCY OF THE SLOVAK REPUBLIC AND SME IN SR

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Abstract

Innovations represent motive force for development of actual economy which builds its basis on knowledge and sciental society. European Union in ambition of gaining the level of the most advanced and competitive economy all over the world deals with innovative efficiency of its member states and regions, so as with individual enterprises. Innovative efficiency and potential differs in every European Union region. Slovak republic is situated at the end of innovative efficiency at all the levels – national, regional and enterprise level.

The article also analysis the possibilities of innovation project support in agriculture in Slovak republic during the years 2007-2013. The aim was to evaluate the impact of innovation projects supported by Fund EAFRD on the competitiveness of selected agricultural enterprises in region Nitra and Trnava. We can state that agricultural enterprises are having high interest in implementing innovation possibilities, which are co-financed by financial sources from EU. The use of financial support from the EAFRD Fund was during the analyzed period 2007-2009 at 80%. The impact of innovative projects is one of the key factor increasing the competitiveness is in agriculture.

Key words: SME, competitiveness, innovations, business, European Union, agricultural subject, EU financial support.

JEL Classification: O

Introduction

Innovations constitute a motive force of business and economic development in all advanced market – oriented countries. Moreover, they are important essential assumptions for grow of competitiveness in private and public sector and basis for sustainable society. Level of innovative efficiency of enterprises and individual regions or countries is widely different. These differences are base of formation and constant persistence of regional disparities in the world as so as in the European Union.

Literature overview

Publication “Innovation and Companies” [1] defines innovation as an implementation of new or significantly improved product (good or service), process, new marketing method or new organisational method in business practice, work surroundings of all organisations or in external relationships.

Ministry of economy of the Slovak republic defines innovation in its “Draft law on innovations” in more global context as a new or improved product or service brought out to the market based on results of research and development or business activities, implementation of new, significantly better manufacturing process or distribution method

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including important technical or software changes, implementation of new ways of organising in agricultural business practice, workplace organisation or external relationships.

Modernization and implementation of new technological innovations is to be understood as very important component of support of dynamic development of agriculture in Slovak republic, which will be competitive on domestic as well as on European market. In the frame of regional integration is competitiveness of agriculture influenced by factors connected with innovations, financial sources, productivity, vertical coordination and other support and market regulations. They can be supplemented by marketing, informational and integral techniques (FERENCNÉ et al. In: Korom – Sági, 2005). The traditional understanding of innovations as a science based technological process can also be applied in the situation in rural areas (Stucksmith a Dragan, 2008). It is necessary to understand rural development as a very important factor for destructuralization, diversification and innovation in rural areas, whereby it helps to stabilization of the employment and life in rural areas. At the level of EU we can identify the growing relationship between natural sources and innovations in connection to strategic importance of sustainable technologies, which are based on the use of sources located in rural areas (for ex. wind, water and biomass).

The most acceptable definition of “innovation” is defined in “Oslo manual” [1] elaborated by OECD in 1997 which says that “Technological product and process innovations (TPP innovations) include new products based on new technologies or important technical improvement of existing products or processes. TPP innovation is implemented when the product is brought to the market (product innovation) or new manufacturing process is implemented (process innovation).” OECD also defines four basic innovation categories:

- Product Innovation,
- Process Innovation,
- Organisational Innovation,
- Marketing Innovation.

This categorizing is accepted not only in OECD countries, but also in EU-27 which forms basis for following evaluation of innovative business and regional efficiency.

Methodology

In the article were used the results of research realized under the project VEGA č. 1/0775/10 – The impact of innovative projects financed through EAFDR on the competitiveness of selected agricultural subjects in region Trnava and Nitra, secondary data sources, journals, informational data from Ministry of economy of SR. Data’s for processing of given problematic were used from Paying Agency of SR, statistical sources from Eurostat. Methods used in article were mathematical and statistical data analyses, comparism analysis and scientifical abstraction.

Results

Level of innovative efficiency of EU-27 and Slovak republic

Evaluating of innovative efficiency in European Union has being done since 2003 through the “Innovation Union Scoreboard (Regional Innovation Scoreboard till 2009)”, whose output is Summary Innovation Index (SII). Data are summarised and thereafter published by
European Commission and its Directorate General Enterprise and Industry using services provided by Eurostat and Join Research Centre.

**Actual state and development of Summary Innovation Index (SII) of EU-27 and Slovak republic**

Due to evaluation of last done researches and calculations published at the start of 2011, we can state that summarised innovation efficiency of EU-27 reaches SII value equal 0.516 (interval range is 0.0 – 1.0). In medium-term aspect, EU-27 reaches stable average innovative efficiency.

When comparing EU-27 and Slovak republic, innovative efficiency of Slovak republic is under the European average and its last SII value reached 0.269, which represents only half of average value of European Union’s member states. In medium – term development, we can observe minimal year-on-year changes. By contrast, Czech Republic registers significant positive growing trend in innovative efficiency.

**Graph 1 - Innovative efficiency in EU-27**

**Graph 2 - Medium-term trend and predictions of innovative efficiency in SR, CZ and EU**
Adding the linear trend with prediction we can make a simple concept about assumed future state using foregone results. Using a graphic output below, we can assume positive trend in rising of innovative potential in Slovak republic, as so as in Czech Republic or EU-27 in general. At the other hand, level of development of Slovak republic is markedly deficient and without any potential chance to cope with other member states.

**Investments to research and development in individual regions of EU-27 and Slovak republic**

In 2010, European Union elaborated Strategy named “Europe 2020” which involves an unfulfilled goal from Lisbon Strategy to achieve an increase of investment to research and development to 3% of GDP of European Union. At present, the R&D investments reach just over than 1% of EU-27 GDP while a huge regional disparity exists. In European Union, there are both types of regions – those with R&D investments close to zero and also regions considered to be innovation leaders with investments almost 6.8 % of GDP. Calculated in nominal value, these differences are more striking. Following picture provide a visual display of individual regions at the level NUTS 2 in EU-27.

**Picture 1 - Investments to research and development in EU-27 regions**

![Map of EU-27 regions](source: Eurostat, 2011)

When talking about investments to R&D, Slovak republic is in long-term aspect financially undersized, what causes its miserable innovation efficiency. In medium-term aspect, investments to this field are decreasing and most of them come from European Union funds.

At present, Slovak republic invests to Research and development only about 0.5% of GDP. This value is well below the European average, and in term of Europe 2020, practically tragic. Moreover, there are wide differences between Bratislava region and the rest of Slovak republic (see the picture above – Picture 2)
In long-term aspect, science (including applied research) and development of new goods, services, processes are one of the most undersized fields in Slovakia. Simultaneously, in relative term, the difference between advanced Europe and also total average of EU-27 and Slovakia is continually growing. In every Slovak region, share of expenditures intended for R&D continues to decline, both in private and public sector. Significant disparity also exists between Bratislava region and other regions. At average, investments in Bratislava region attain three times higher values than the rest of Slovakia.

Comparing level of innovation efficiency of enterprises in Slovakia and European Union

Public sector is not the only determinant of total innovative accomplishment and region’s potential, similar importance has a business sector in concrete region. Innovativeness of enterprises is a basis for improving their competitiveness and also a question of long-term survival.

Level of innovative efficiency of slovak enterprises is lower than EU-27’s average for a long time. Total orientation of industry and services is focused on departments with low added value, for example assembly in automotive or electrotechnical industry. Total allocation of GDP formation by enterprises in Slovakia is considered to be other reason of low innovation efficiency. The bulk of GDP is formed by several international enterprises which let their know-how and R&D centers at parent companies, while subsidiaries located in Slovakia serves just for production purposes with mancomunal technologies. All these aspects reflect total investments to innovations coming from the private sector.
Investments to innovations coming from the private sector

Investments to research and development are one of the most basic ranking parameters used in the process of evaluation the innovation efficiency of enterprises. These values reflect potential ability of private sector to invest to higher competitiveness and efficiency of enterprises.

Investments to research and development in Slovak enterprises fluctuate for a long time at about 0.2 % of GDP, while average of EU-27 is 1.25 %. To compare, country with highest innovation index, which is Sweden, invests to innovations more than 2.5% of its GDP. High persisting grow of investments to innovations can be seen in our neighbour – Austria, where the value approaches to 2% of GDP. This makes Slovak republic to be indirectly perceived as critically lagging and without any sign of positive trend.

Graph 4 - Investments to Research and Development in private sector

Source: Eurostat, 2011

Innovations in small and medium enterprises in European Union and Slovakia

Small and medium enterprises are basis of employment and formation of added value. Moreover, they have a significant impact on creation of public resources by tax system of European Union countries. Their innovative efficiency and potential determine following direction of development of national economy and its orientation.

Within European Union, we monitor existence of countries oriented to activities with low added value and on the other hand, the countries oriented to knowledge based economy. Disparities between EU member states are more than striking.

Share of innovative enterprises in Slovakia is same as in other cases - significantly below the EU-27 average and, in comparison with the most innovative member state with 15%, reaches only third.

If we focus on process and product innovations which are base of forming offered goods and services in small and medium enterprises, we can find that situation is very similar to other indicators of innovative efficiency of enterprises and regions.

As you can see in the graph above, process and product innovation is realised by less than 20% of small and medium enterprises in Slovakia, while in Czech Republic it’s almost 35 and in Sweden and Finland it is more than 40%. Country with the highest innovation is Germany with more than 50% of SME’s.

The most significant reasons of insufficient innovation efficiency in Slovak enterprises

Level of innovative efficiency of slovak enterprises including category SME lies in the existence of several structural problems of slovak economy, policy and also national legislative.
To the most fundamental reasons we can include:

- insufficient support of small and medium enterprises in Slovakia
- non-existence of regional innovative centers
- absence of high-tech incubators for SME
- significant administrative burden of small and medium business
- lack of qualified labour force whose educations would reflect real market needs
- insufficient support of applied research and development from state and public sphere
- weak cooperation between public research and educational institutions (universities, vocational schools, research institutes,...)
- difficult access to European Union funds devoted to support science, research and innovations
- effort of government to reallocate money devoted to support science, education and employment to infrastructure construction
- insufficient support from government and regions to fulfil the innovation policy of Slovak republic and European Union in conditions of Slovak republic
- lack conception of transformation of manufacturing economy to knowledge-based economy

The impact of innovative projects on the competitiveness of agricultural subjects in Slovak republic

Membership in the EU meant for Slovak republic implementation of changes in business environment, mainly focused on internal market, which includes also changes for agricultural subjects.

For the last 10 years did the countries of EU-12 recognize notable economic growth and they did decrease the gap between GDP per inhabitant compared to EU-15 countries. The increase of the primary sector share on GDP per inhabitant was in EU-12 countries 9.3% compared to EU-15 countries, where it was only 4.7%. But despite of this fact by the evaluation of the use of EU financial sources it is necessary to take in account the still existing differences in agricultural sector between EU-12 and EU-15 countries, mainly in area of structure and dynamic of agricultural sector. To secure the sustainable growth in future, the growth should be based on innovations and technological changes. In the competitive environment of EU, mainly in agricultural sector is necessary, that the agricultural subjects will innovate, not only to create the flow of new products and ideas, but also to increase their value on interval market.

EU focuses on multifunctional agriculture and rural development by implementation of measures included in EU Common agricultural policy. Therefore EU supports sustainable agriculture, which focuses on the use of land, which plays the key role in the competitiveness of rural economy and rural landscape. As a very important factor which does influence the competitiveness is the influence of innovative projects on the competitiveness of agricultural subjects. The increase of agricultural competitiveness is for the EU important and this goal is also included in the plans of Slovak republic. Namely in the Programme for rural development for the years 2007 – 2013, which is the main document to realize this plans. Programming period 2007-2013 continues on focusing on main priority - rural development which can be reached by modernization of primary sector. Agricultural subjects in Slovak republic can acquire the financial support for innovative projects through the Programme for rural development in SR for the years 2007-2013 (PRD SR). This document involves the priorities of National strategic program of SR. Main proportion of agricultural subjects in Slovakia is actively using the possibility to gain the EU financial sources from the EAFRD Fund on innovative projects inside the priority 1 – Support of modernization, innovations and efficiency of agro food and forest sector. Therefore is for Slovak enterprises important to
focus on modernization of machinery and buildings, the use of natural sources for energy production, but also to increase the education and the flow of information between rural inhabitants, mainly farmers.

As can be seen in the table 1 in convergence regions of Slovakia (whole area of Slovakia except Bratislava region) and other regions in the frame of measure 1.1 farm modernization was contracted 645 farms, in total amount of 263.72 EUR it was 32% from planned number of supported farms for the years 2007-2013 (until 26.3.2009). Under the measure 1.2 Adding the value to agricultural enterprises and products for forestry was contracted 103 agricultural subjects in total amount of 121.1 mio. EUR. This represents support of less number of agricultural subjects comparing to the measure 1.1, only 23% from planned number of 450 subjects.

Table 1 - The number of supported farms and total support of contracted innovative projects until 26.3.2009

<table>
<thead>
<tr>
<th>Measure</th>
<th>The number of supported farms</th>
<th>Support in total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1. Farm modernization</td>
<td>645</td>
<td>263.72 Mio. EUR</td>
</tr>
<tr>
<td>1.2. Adding the value to agricultural enterprises and products for forestry</td>
<td>103</td>
<td>121.1 Mio. EUR</td>
</tr>
</tbody>
</table>

Source: Author’s calculations based on Slovak Paying agency data, 2011

Based on data realized via project Vega n. 1/0775/10 was until 26.3.2009 contracted under the measure 1.1 Farm modernization (including the projects oriented on renewable energy sources) the number of 18 innovative projects in examined agricultural subjects of Trnava region and number of 21 projects in examined agricultural subjects of Nitra region. Under the measure 1.2 Adding the value to agricultural enterprises and products for forestry was contracted the number of 4 innovative projects in examined agricultural subjects of Trnava region and number of 6 projects in examined agricultural subjects of Nitra region until 26.3.2009. This numbers are not very positive from the development of rural areas point of view. The situation in other region is similar; the number of innovative projects is insufficient to reach the overall European competitiveness. There are a lot of factors causing this situation on the agricultural subject’s side, as well as on the side of Slovak government administration. If we compare these selected subjects according their economical results, we can allege that in all legal forms of agricultural subjects in Trnava and Nitra region were in the years 2008 and 2009 the farming results stable, profit in the year 2009 slightly decreased, but the share of profitable subjects stayed unchanged. Based on research realized in the frame of project Vega n. 1/0775/10 we can state, that market support and efficiency of production realized through innovative projects did contribute to reach the profitability of examined agricultural subjects. So one of the key factors increasing the competitiveness is the impact of innovative projects.

The EU possibilities of financial support for innovative projects does represent very important source of introduction of new innovative technologies to production process in Slovak republic and in the future they can contribute to the increase of competitiveness in the examined agricultural subject, as well as in other agricultural subject in Slovakia. During the monitored period (2 years, which is a short period to estimate a long-term predictions), the evaluated agricultural subjects stabilized their incomes and despite of overall unfavorable economic developments the agricultural subjects did not notice notable decrease of profit only slight increase of costs. Based on listed above it is possible to state, that used financial sources from the EAFRD Fund approved for the realization of innovative projects via introduction of
innovative technologies and technological process by examined agricultural subjects and they had positive impact on sustainment and stabilization of incomes in these subjects. Main agricultural subject are located in rural areas, which do have special structural features, as relatively low economic basis, limited business opportunities, low interface between sectors, relatively low level of knowledge transfer, because of listed features do such rural areas belong to less favorite areas to implement innovations. Therefore the support of implementation of innovation on agricultural level is the main task of government support via Programme for rural development in Slovak republic for the years 2007-2013. Such a support should lead to the creation of strong and viable agricultural sector, which will fulfill the requirements of consumers.

Graph 5 - Supported Innovative Projects in Agrisector – Trnava and Nitra region

It is requisite, that agricultural subjects will realize technological innovations to reach the competitiveness not only on regional but also on European level. The importance of EU financial support for innovative projects is to be seen also from previous programming period. From the evaluation of programming period realized in the years 2004-2006 comes out, that for all region of Slovakia were approved 907 projects under the measure 1.1 Investment to agricultural holding. But the intention to receive EU financial support was doubled. The same situation was under the measure 1.2, which was oriented to agro food sector, where the main interest was oriented on the improvement and rationalization of production processes.

Summary

Summarising presented results, we can state that constant level of innovation index with minimal year-on-year changes means that Slovak republic and European Union fail in fulfilling goals of Lisbon Strategy related to innovative efficiency, so as in its continuer – Europe 2020, whose goal is to make European Union become a world leader in innovations and increase share of investments to research and development to 3% of GDP. Strategies don’t come true in real terms and confirms only formal interest of European Commission and national governments in higher innovative efficiency and transformation to a knowledge-based economy. In conditions of Slovak republic, all of these statements are more significant because of the position of Slovak republic at the end of building a knowledge-based economy based on innovations and supporting formation of enterprises producing goods and services with higher added value.

The primary goal of SR is to create a strong and viable agricultural sector through market oriented production. It is possible to reach the given goals on the agricultural level through the
investments into production facilities with the accent on innovative approach. From the article results the interest of agricultural subjects on the possibilities to use the EU financial support also in programming period 2007-2013. The demand of agricultural enterprises to obtain the financial support for projects during the programming period 2007-2013 is relatively high. Despite of mentioned interest from the agricultural subject’s side it is still evident inefficient demand after innovations in this sector, weak motivation for introduction of innovations in agricultural sector. From the article results that selected agricultural subjects from region Trnava and Nitra are actively using the financial support from the EAFRD Fund. We can state, that these support for innovation projects and production efficiency in connection with realization of these projects has helped to profitability of these subjects. It is necessary to state, that not only innovations and their implementation in production process but also rational allocation of production structures into the most appropriate natural and production conditions and optimal combination of the use of the main production sources are contributing to strengthen the competitiveness of agricultural subjects.

Bibliography


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