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EVALUATION OF THE IMPACT OF INNOVATIVE PROJECTS ON THE COMPETITIVENESS OF AGRICULTURAL HOLDINGS IN SLOVAK REPUBLIC

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Abstract

The scientific paper evaluates the impact of innovative projects on the competitiveness of agricultural holdings in SR. Evaluation of the impact of innovative projects on competitiveness of agricultural holdings was realized on the selected holdings in Nitra and Trnava region. For the evaluation was used RCR coefficient. With the use of RCR coefficient could be confirmed the scientific hypothesis - The innovative projects realized through Program for rural development SR 2007-2013 have positive impact on competitiveness of agricultural holdings. The possibilities for EU financial support for innovative projects in SR represent important source for introduction of new innovative technologies into production process and in future they can significantly contribute to the growth of competitiveness of agricultural subjects. Therefore, to increase competitiveness of agricultural holdings it is important to focus on modernization of machinery and buildings, use of natural sources for energy production, but also to increase the education and the flow of information between rural inhabitants, mainly farmers. In competitive area of EU agricultural sector it is necessary that agricultural holdings will innovate, not only to create independent flow of innovative products and knowledge, but also to increase its value on internal market. Agricultural holdings – receivers of financial support – have expressed the opinion that financial support realized through PRD SR 2007-2013 had definitely allowed them to implement new processes and products.

Key words: *agricultural subject, competitiveness, financial support, Innovations projects, Program for rural development SR 2007-2013*

INTRODUCTION

Innovations present one of the most important motive forces for business and economic development. Innovations are basis of gaining and sustaining enterprise competitiveness. However, they have more significant meaning at the level of agricultural subjects, which produce adequate amount of high quality food not only for region population; they also ensure sustainable regional development and landscaping. The aim of the paper is to evaluate level of innovative efficiency of Slovak Republic focused on evaluation of supporting the innovative project (realized via PRD SR 2007-2013) in agricultural holdings in Slovak Republic, mostly those in west region of Slovakia.

Traditional understanding of innovations as a science based on technological process can be also applied in rural areas [7].

Modernization and implementation of new technological innovations needs to be understood as a very important component of supporting dynamic development of agriculture in Slovak republic, which will be competitive not only on the domestic market, but also on the European one.

In the frame of regional integration, competitiveness of agriculture is 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 [4].

It is necessary to understand rural development as a very important factor of reconstruction, diversification and innovation in rural areas, whereby it helps to stabilize 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 with strategic importance of sustainable technologies based on the use of local rural sources (e.g. wind, water and biomass).

For the creation of multifunctional agriculture and rural development are the measures of Common agricultural policy EU oriented to setting out the sustainable agriculture in EU member state, where the use of agricultural land defines the main task in the competitiveness of rural economies and rural areas. European community puts accent on increasing the competitiveness of agriculture. Therefore also Slovak republic involves this goal in its plans. SOP agriculture and rural development 2004-2006 and Rural development Programme for SR 2007 – 2013 [5] are based on measures which are oriented on increasing the competitiveness in agriculture and forest sectors. Based on given facts was the research oriented on appraisal of the impact of innovative projects on competitiveness of agricultural holdings in region Nitra and Trnava. If we are facing the tasks of evaluation of competitiveness in sector of national economy, it is important to consistently consider all possibilities of research.

The competitiveness in sectors is reached, if individual enterprises are able to sell products and services for the price and in quality which is at least on the same level as their competitors. Therefore - basically – the competitiveness should be seen as economic efficiency or productivity [2]. By the ambition to define the competitiveness we can see, that there is no uniterm definition. It is necessary to realize, that the competitiveness is not only in comparative advantage, but also has to include the condition of sustainable development and rural development and throughout also the condition concerning the quality of life. Several points of view for this parameter do exist, which allow focusing on the competitiveness in agriculture in various dimensions [1],[8]. Besides the tasks of choosing the level of competitiveness there comes out the question, what is it main indicator. If it is reaching profit, high salability of enterprises products or reaching good economic results in other economic indicators. It is clear that the complexity in evaluation of competitiveness is necessary. We will try to fulfill this condition by evaluating the competitiveness on by using the complex competitiveness indicator (RCR).

Also the issue of financial support in agriculture is very specific. It is necessary to note, that by solving the financial support stimulus we are facing with the wide range of opinions. By evaluating the direct and subsequent effects of support policy in agricultural sector the effect of agricultural support is very important in productive regions as well as in less favoured areas. The support policy and supported programs do significantly contribute to the economic growth in enterprising in agriculture and it is important to mention also their influence on quality, production as well as on rural development.

Identification of knowledge together with results of scientific-technological research represents important basement for innovations, which are realized in rural areas [3] and definition of rural innovations is to be understood as introduction of new element (significant change) into economic and social life in rural areas, which adds new economical and social value to the life in rural areas. Mahroun et al. [3] are identifying 3 types of rural innovations:

⇒ Innovations created in rural areas which are applicable widely

⇒ Innovations created in industrial centres and applied in rural areas

⇒ Innovations which can be understood as all-purpose genesis and are having strong impact on life in rural areas (f.e. internet)

Named types of innovations are linked to each other in the frame of market mechanism in rural area.

MATERIALS AND METHODS

The research was realized as a part result of the VEGA project n. 1/1213/12 Variant approaches of measuring competitiveness of regions. As materials were used data (economic indicators) of 38 observed agricultural holdings (Nitra and Trnava

region) as well as data provided by Payment agency of SR and Eurostat data. Evaluated period was 2007-2011 (compared to period 2004-2006).

The evaluation of the impact of innovative projects was realized by using the statistical method:

RCR coefficient („Resource Cost Ratio“) for determination of the competitiveness level of agricultural enterprises

RCR <0 – 1,0> competitive enterprise

RCR > 1,0 the enterprise is not competitive

The RCR coefficient is calculated as ratio of costs and revenues. Costs included material costs, production costs, depreciation of fixed assets, taxes and charges. Renevues included profit from goods sales, production profit and financial support realized via PRD SR 2007-2013.

Evaluation of the RCR coefficient was used for confirmation of the hypothesis.

Research hypothesis:

Innovative projects in agriculture do have positive impact on competitiveness of agricultural subjects in region Nitra and Trnava.

In paper were used also qualitative methods - dialogue with selected beneficiaries of Programme for Rural Development for SR 2007 – 2013. Other methods used for the fulfillment of the research were mathematic-statistical data analysis, regional comparative analysis of selected economic indicators and driven dialogue with the Payment agency of SR experts.

RESULTS AND DISCUSSIONS

The scientific paper focuses on the identification of innovation factors and the evaluation of the impact of innovation projects supported by EU Funds (European Agricultural Fund for Rural Development – EAFRD) oriented on agriculture and rural development for improving the competitiveness of agricultural enterprises.

Innovations can be understood in wide range complex. They can be understood through introduction of new product, new technological process, new organization or new markets. This definition can be applied in rural areas as well as in urban areas. Based on the low population density and relatively insufficient level of human and physical sources have the rural areas arranged connection to the research centres, therefore they are limited by production of innovations. Innovations in rural areas can include adaptation of wide range applicable innovations, modernization of traditional know-how, or search for new solutions in connection to rural problems, which can not be solved by intervention of other policies in sustainable way.

Agricultural holdings in SR can receive EU financial support for innovative projects through Programme for Rural Development (PRD SR) for the years 2007 – 2013. This document involves the priorities of National strategic program for rural development of SR and contributes to the fulfillment of Lisbon strategy in areas focused on knowledge, innovations, internal market and enterprise environment, growth and employment and sustainable development. Programming period 2007-2013 continues on focusing on main priority - rural development which can be reached by improving competitiveness in agriculture and forestry sector through modernization of primary sector. Agricultural enterprises in Slovakia are using the possibility to receive the EU financial support from the EAFRD on innovative projects inside the priority 1 – Support of modernization, innovations and efficiency of agro food and forest sector.

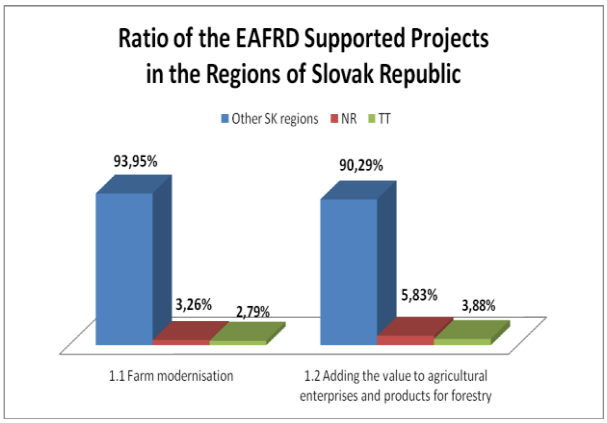

Fig 1.Ratio of the EAFRD Supported Projects in the Regions of Slovak Republic

Source: Author’s calculations based on Agriculture Paying agency (APA) data, 2011

Fig.1 evaluates the distribution and the intensity of financial support expended from the Fund EAFRD for the innovation support view during the years 2007 – 2010 realized in the frame of Rural development Programme for SR 2007 - 2013, axis 1 improvement of competitiveness of agricultural and forestry sector, measure 1 - modernization of agricultural holdings and measure 2 - adding value to agricultural and forestry products. As shown in fig.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, there were 645 contracted farms, in total amount of 263,72 mio. EUR (32% from planed number of supported farms for the years 2007-2013 - data until 31.12.2011). Under the measure 1.2 - Adding the value to agricultural enterprises and products for forestry, there were 103 contracted agricultural subjects in total amount of 121,1 mil. EUR. This represents support of less number of agricultural subjects comparing to the measure 1.1, only 23% from planned number of 450 subjects [6].

The possibilities for EU financial support for innovative projects in SR represent important source for introduction of new innovative technologies into production process and in future they can significantly contribute to the growth of competitiveness of agricultural subjects. Therefore, to increase competitiveness of Slovak enterprises it is important to focus on modernization of machinery and buildings, use of natural sources for energy production, but also to increase the education and the flow of information between rural inhabitants, mainly farmers.

The impact of innovative projects based on improvement of market access and on increase of the market share of agricultural subjects can be evaluated through following criteria – introduction of new products or technological processes. Based on the innovation definition was analysed the number of projects introducing new techniques, technologies or products, which are to be understood as innovative projects in Nitra and Trnava region, as shown in table 1. The share of mentioned agricultural subjects on total number of observed subjects was low, mostly the holdings tend to introduce new products.

Table 1.Number of projects introducing new techniques, technologies or products, which are to be understood as innovative projects. (Region Nitra and Trnava)

	Number of holding	Share on total observed holdings
New techniques	5	46,7%
New products	6	2,1%
Without introduction of changes	4	44,6 %

Source: Author's calculation based on information from observed agricultural holdings, 2011

The aim of the research was also to evaluate how the effective change of production or use of productive factors caused the change in basic structure of agricultural products. For the evaluation were compared selected economic indicators by observed agricultural holdings in Nitra and Trnava region (fig 2).

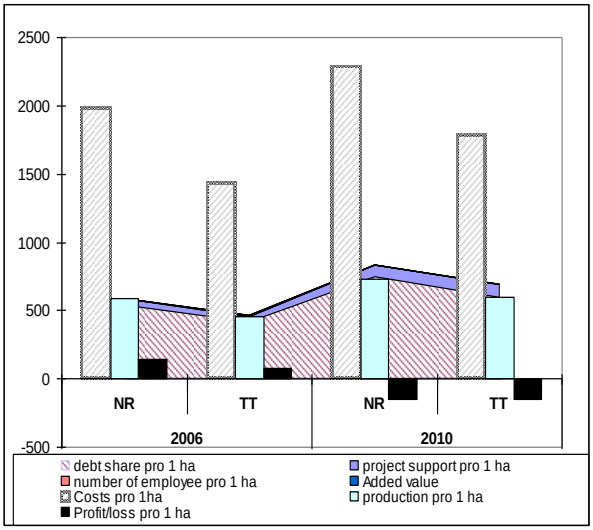

Fig 1: Comparism of selected economic indicators evaluated by observed agricultural holdings in Nitra and Trnava region years 2006 and 2010 (EUR.ha-1)
Source: Author's calculation based on data from observed agricultural holdings, 2012

Based on the comparism shown in fig. 2 we can state that the debt share pro 1 ha u.a.a. increased in agricultural holdings in Nitra and Trnava region. Increase was also observed by indicator – production pro 1 ha u.a.a. in Nitra as well as in Trnava region. Indicator added value showed plus value in year 2006, but due to the economic stagnation in years 2009 and 2010 was the added value negative. The same

results were calculated also by the indicator profit. Based on the employment evaluation it is possible to determine evident decrease of employees. In evaluated agricultural holdings of Nitra and Trnava region were observed changes in profit as a contributor of added value. We can state, that in certain evaluated agricultural holdings based on specific conditions in agriculture a significant change in structure of basic products was observed. This change was caused by introduction of alternative products, or by the use of other technique based on the realization of projects. In these holdings was also the increase of added value observed.

Based on the evaluation the innovative projects contributed to the creation of profit. The main contribution was evaluated in the decrease of labour production intensity. Also was observed the stabilization and moderate increase of utilized agricultural area (u.a.a.) and increase of shareholding assets pro 1 ha u.a.a. in Nitra region holdings and moderate decrease of shareholding assets pro 1 ha u.a.a. in Trnava region holdings.

Based on the research were following factors influencing the realization of innovative projects determined:

- Professional management of projects – significant influence on the positive project implementation
- Production extensity
- Regional support
- cooperation (mainly with research centres)
- suitable enterprise plan (from the long term view)
- agricultural holdings assets (financial position)
- farm size – the results showed dominant interest for innovative projects by agricultural holdings with u.a.a. over 1000 ha, number of employees more than 25, legal entity – Ltd..

Agricultural holdings – entitled to receive project support stated, that financial support realized through PRD SR 2007-2013 allowed them to introduce new techniques and products. Based on this statement, we can evaluate the positive impact of financial support realized via PRD SR on enterprising of agricultural holdings.

Evaluation of the impact of innovative projects on competitiveness of agricultural holdings was realized on the selected holdings in Nitra and Trnava region. For the evaluation was used RCR coefficient. With the use of RCR coefficient could be confirmed the scientific hypothesis.

In the research were compared two programming periods of SR (realized during years 2004-2006 in the frame of Sectoral Operational Programme Agriculture and Rural Development and during the years 2007-2010 in the frame of axis 1 of Rural development Programme for SR 2007 – 2013) in terms to evaluate competitiveness of agricultural holdings.

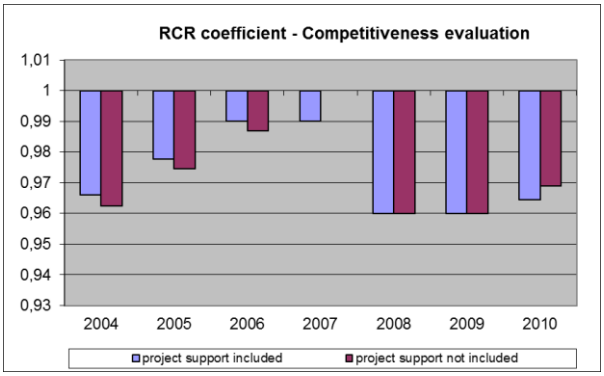

Fig 3: Competitiveness evaluation calculations based on RCR coefficient

Source: Author's calculation based on data from observed agricultural holdings, 2012

Based on shown fig. 3 agricultural holdings are competitive if the RCR index is between the range <0-1>. Based on the calculations we can state that during the years 2004– 2006 – implementation of SOP for Agriculture and Rural development – compared agricultural holdings were competitive. By the comparism of economic data with included financial support based on projects and without included financial support was the evaluated level of competitiveness lower compared to financial support realized via projects. During the programming period 2007-2013 was observed slightly lower level of competitiveness compared to the programming period 2004-2006. One of the main reasons is relatively higher financial costingness of projects in programming

period 2007-2013 connected to modernization, mainly to introduction of new techniques and technological processes. The competitiveness level of holdings in year 2010 was lower due to the higher credit carrying-capacity and due to the overall decrease of profit in observed agricultural holdings. It is necessary to state, that the return of investment is long term and needs to be evaluated for longer time period.

Main agricultural holdings are located in rural areas which do have special structural features, e.g. relatively low economic basis, limited business opportunities, low interface between sectors, relatively low level of knowledge transfer and lower competitiveness. Because of listed features, these rural areas belong to less favorite areas to implement innovations. Therefore, 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. Support goes to production facilities (agricultural buildings, storage capacities, machinery, technologies with the emphasis on innovative approach) and support on projects oriented on effective use of renewable sources should secure creation of strong and viable agricultural sector, which will fulfil the requirements of consumers by wide range high quality food supply fulfilling all requisite health and sanitary standards. It is requisite that agricultural subjects will realize technological innovations to reach the competitiveness not only on regional, but also on European level.

CONCLUSIONS

The scientific paper evaluates the impact of innovative projects realized via PRD SR 2007-2013 on competitiveness of agricultural subjects.

Summarization of results based on the realized research:

- Based on the realized research the scientific hypothesis was approvedn– Innovative projects in agriculture do have positive impact on competitiveness of agricultural subjects (researched in region Nitra and Trnava)
- Holdings consider financial support (via projects) as an important support in connection to the competitiveness level
- Evaluated positive impact on competitiveness of agricultural holdings and increase of labor productivity (significant positive impact – evaluated in economically strong holdings)
- As one of the main determinant were indentified the costs of the project and approach to external financial sources (loans) – impact on differences in competitiveness level
- Innovative projects allowed holdings multifuncionality through diversification
- Based on evaluation of sustainability, the observed holdings realized new economic activities (not connected to the main production) in connection to use secondary products and diversification

Financial support allowed receivers of support to strengthen the production capacity, improve the use of factors of production and introduction of new techniques and products in short time period, which caused the maintaining and moderate increase of the competitiveness level (holdings in Nitra and Trnava region) in connection to their future activity, increase of the market share and more stable production and development in future.

Project support had indirect influence on added value in connection to short term evaluation – from the long term evaluation it is possible to assume more positive impacts on holdings.

The evaluation of PRD SR requires longer period for evaluation based on the long term returns on investments.

It is necessary to state, that not only the innovations and their introduction into production process, but also rational allocation of productive structures into the most favorable natural and production conditions and optimal combination and cohesion of main production factors use are contributing to strengthen the competitiveness of agricultural subject.

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