

UDC 332.143

## ESTIMATION OF INNOVATIVE COOPERATION OF TRIPLE HELIX MODEL

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Key words: Triple Helix Model, innovative cooperation, cross border regions.

Abstract: Regional cooperation obtained a large role in the development of the globalization conditions, particularly important becomes its innovative nature. The article defines the regional cooperation main achievements and key challenges using triple helix modelling, and provides recommendations for their elimination.

The main concept of innovations in post-industrial society is Triple Helix Model. The concept of the Triple Helix of university-industry-government relationships initiated in the 1990s by Etzkowitz (1993) and Etzkowitz and Leydesdorff (1995) [4]. The Triple Helix thesis is that the potential for innovation and economic development in a Knowledge Society lies in a more prominent role for the university and in the hybridisation of elements from university, industry and government to generate new institutional and social formats for the production, transfer and application of knowledge [3] (fig. 1). The concept of Triple Helix Systems of innovation [2] was recently introduced as an analytical framework that synthesises the key features of Triple Helix interactions into an 'innovation system' format, defined according to the systems theory as a set of components, relationships and functions. The relationships between components are synthesised into five main types: technology transfer, collaboration and conflict moderation, collaborative leadership, substitution, and networking. The overall function of Triple Helix systems of knowledge and innovation generation, diffusion and use is realised through a set of activities in the Knowledge, Innovation and Consensus Spaces. From a Triple Helix systems perspective, the consolidation of the spaces and the non-linear interactions between them can generate new combinations of knowledge and resources that can advance innovation theory and practice, especially at the regional level.

The aim of the research is to identify the problems and prospects of innovative cooperation of cross border cooperation between small and medium-sized businesses (especially in the field of innovations) using triple helix modelling.

The main data for analysis of innovative cooperation in the triple helix model in the cross-border regions under consideration were obtained by means of entrepreneurs' questionnaires under the research "Cross Border Cooperation of Small and Medium Enterprises: Problems, Opportunities, Prospects" (2014-2015) under the program of cross border cooperation Latvia-Lithuania-Belarus, in which author has participated as volunteer. The objects of the research are cross border regions in: Latvia (Latgale region), Lithuania (Vilnius county, Kaunas county, Utena county, Panevezys county, Alytus county), Belarus (Minsk oblast, Mogilev oblast, Grodno oblast, Vitebsk oblast) within which the coordinated economic relations are being established.

There were surveyed 600 small and medium-sized enterprises in the period from April to June 2014 in the regions under investigation in Lithuania, Latvia and Belarus. In the process of work on the base in the SPSS program, the survey data were subjected to weighting on the main directions of stratification, as a result the deviations of the parameters of the sample from the parameters of the general population.

It is determined that the best-developed activities in cooperation between enterprises and local authorities are as following: regular (informal) contacts of companies' employees and representatives of local authorities within professional associations, conferences, seminars, and forums (5 % – 22.5 % of enterprises in Belarus region assessed the cooperation as "developed" and "very developed", 10.4 – 33.7 % in Lithuania, 22 % in Latgale); special consultations of companies' experts at local authorities (5.7 – 26.5 % of enterprises in Belarus regions, 10.2 – 26.5% in Lithuania, 17.2% in Latgale); formal cooperation on contract basis (4.9 – 27.1 % in Belarus regions, 1.6 – 24.8 % in Lithuania, 18.1 % in Latgale) [1].

The most developed activities within cooperation: formal cooperation on the contract basis (12.3 – 27.4 % of enterprises in Belarus regions assessed the cooperation as "developed" and "very developed";

0 – 23.8 % in Lithuania regions, 27.9 % in Latgale); regular (informal) contacts between companies' employees and representatives of local authorities within professional associations, conferences, seminars, and forums (maximal 10.6 % in Belarus regions, maximal 14 % in Lithuania, 18 % in Latgale) [1].

Notwithstanding a high degree of risk, Vilnius region is the leader in inter-company competitive cooperation (48.5 % of companies). Competitive cooperation is less developed in the companies in Utena, Kaunas, Latgale regions, Grodno region, Mogilev region, Alytus region (36.1 %, 28.1 %, 26.4 %, 23 %, 22.3 %, 20.1 % respectively). Panevezys region, Minsk city, Vitebsk region, and Minsk region are the outsiders in the development of competitive cooperation (17.2 %, 17 %, 6.2 %, and 1 % respectively) [1].

Assessing the cooperation between enterprises and science institutions in the cross-border region it is necessary to mention its poor development even at an individual level with an isolated way of relations [1]. The best cooperation is determined in Latgale; leader in cooperation with local authorities is Mogilev region.

On the basis of the survey data managers of enterprises noted the main obstacles or barriers in cooperation between business and authorities, authorities and science institutions, science institutions and business. There were mentioned a high level of bureaucracy in government institutions, a corruption, conservatism of law acts, distrust, a lack of motivation, as well as a lack of dialogue, underestimation of science by authorities, a lack of common interests, fiscal policy, laws and regulations, a lack of finances or investments were mentioned as obstacles for cooperation between business and science institutions [1].

The individual level of regional collaboration between science, businesses and government is shown as isolated way of relationships and can be characterized by conferences and seminars, forums, lectures. The individual/institutional level with a vertical way of relationships can be characterized by work invitations in companies for universities' academic personnel, training courses for company's employees by universities' specialists. The individual/institutional level based on the partnerships where there is competition can be characterized by the joint discussions on strategic plans in the process of their elaboration, joint publications, joint debates on dissertations and theses at conferences, organization of joint publication services (journals). The institutional level is based on horizontal triple helices and can be characterized by the access to special equipment at a company or university, by the investment of funds into provision of universities, regular purchases of results of university research, formal cooperation on the contract basis.

The most preferable development of regional innovation systems is the development in the direction of the enhancement of horizontal interactions between government, science and business by making the so-called triple helix. The science activity of universities interacts with government and representatives of business influencing each other and encouraging the economic development of the regions.

Entrepreneurs evaluate the innovative cooperation between universities, government and industries quite negatively, emphasizing its lack in so many areas. There was mentioned lack of information, lack of motivation, bureaucracy in different institutions, lack of trust, lack of dialogue, underestimation of science by authorities, lack of common aims in cooperation, lack of initiative. There were also mentioned conservatism of law acts, a lack of ties between theory and practice, which hinders cooperation highly. The research determined that companies do not want to invest financial resources in risky investment projects, preferring activities that guarantee profits, for example, trade, real estate transactions.

The cooperation between enterprises and science institutions in the cross-border region is characterized by its poor development. The best cooperation in this type of cooperation is determined in Latgale. It could be explained by that Daugavpils University is located in this region, which has a regional importance and which have successfully implemented various projects related to the innovative cooperation area. Mogilev region is a leader in cooperation of companies with local authorities.

There are several options for developing cooperation, both formal and informal. Exchange of views and coordination of positions for current domestic and foreign policy issues promotes the informal consultation mechanisms. Consultation helps to clarify the interests of the countries of the region on topical issues, while their informal nature ensures an open exchange of views. Regions are interested in developing the tools for both the Heads of Government and Foreign Ministers, as well as for expert level. In order to promote innovation, encourage regional cooperation and develop new ideas into the market,

which would contribute to a stable, sustainable and comprehensive economic development, it is necessary to eliminate insufficient legislation, promote cooperation between business and scientific research institutions, improve the region's image, develop innovation effectiveness assessment tools that facilitate the attraction of investors, innovation and development of business environment and the improvement of working conditions of employees.

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