THE MECHANISMS OF AGRICULTURAL SCIENCES, EDUCATION AND BUSINESS INTEGRATION

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Received 05 09 2014; accepted 10 10 2014

The current state of the agrarian economy of Ukraine requires a new system of innovative development of the agricultural sector and deepening the cooperation of central and local executive authorities to address the issues of functioning and development of agricultural education and science. The aim of this study is to develop an up-to-date organizational and economic mechanism of integration of agricultural sciences, education and business in Ukraine. Achieving the aims of the study was carried out using the methods of synthesis and comparative method, as well as the institutional approach framework. It permitted to take into consideration the complex nature of the relationship in the fields of agricultural sciences, education and business. An article covers the conceptual and practical framework of scientific integration of education and production and defines the institutional peculiarities of creation and functioning of an educational research and production cluster using as an example the experience of Zhytomyr National Agroecological University.

Keywords: agricultural science, education, integration, innovation development.
JEL code – I25.

1. Introduction

At the moment, there is the problem of a highly skilled workers training, professionals with higher education and the implementation of the national scientific findings into the agricultural sector. The functioning of agricultural education and science does not fully meet the socio-economic needs of the society, as well as the level of production progress and food security. Solution of mentioned problem is possible if an agricultural education and science are reformed using innovative approaches that provide an opportunity to improve their quality and effectiveness, to ensure efficient use of human and scientific potential of the industry, as well as the competitiveness of the agricultural sector of the national economy and the well-being of the population.

Some scientists also claimed that there was a need for an effective development of innovative component of higher education system along the period of economic and education reforms (Smirnov, 2010; Harin 2011). At the same time, due to their estimates, the traditional model of education is too static, monologic and focused on
the disciplinary partition of the knowledge.

This model, being mostly enclosed and close to equilibrium, is practically incapable to development, and, therefore, becoming increasingly inadequate to realities of a global change process. Achieving the main objective of continuing education in the knowledge society (i.e. perpetual enrichment of creative potential of the personality) is possible in a clustered environment only. In this essence, complicate and complex nature of innovation processes, a high level of risk make it impossible for the successive implementation of innovation without an effective innovation infrastructure to accommodate the needs of the country and particularly the regions, as well as the corresponding resource provision. The certain stages of the results evaluation and feedback providing are important units in the whole chain of the integration of education, science and business.

Unfortunately, as for national investigations, complex theoretical and methodological, organizational and practical study of the integration mechanisms of agricultural science, education and business are missing. Rare studies indicated problems only or focus solely on its individual aspects (Volodin 2012; Zubets, 2009). On the other hand, it is pointed very superficially the experience in the formation of the integrated structures of science and education at some universities (Kaletnik, 2013).

The aim of this study is to develop an up-to-date organizational-economic mechanism of integration of agricultural science, education and business in Ukraine. The object is the process of organizing the domestic organizational-economic integration mechanism of agricultural science, education and business. The subject of this study is a set of theoretical, methodological and practical aspects of the organizing and developing an organizational-economic integration mechanism of agricultural science, business and education in current institutional environment is given.

2. Methods of the research

Theoretical framework of this study includes a systematic approach, as well as a findings of Ukrainian and foreign scientists on the field of developing an integration processes in the education, science and business (Volodin, 2012; Kaletnik, 2013; Mohnachev, 2009; Muraveva, 2011; Neborskij, 2011; Nekipelov, 2006, Smirnov, 2010; Harin, 2011).

Using comparative method and key results of last findings are synthesized, it is carried out the organizational-economic integration mechanism of agricultural science, education and business in Ukraine, which is aimed to ensure the effective interaction of all these areas in order to enhance their development as well as to increase the impact on the economic growth in agribusiness.

The institutional approach is implicated in the study allows to take into account the complex nature of relationships in the fields of agricultural science, education and business, innovation processes in the agricultural sector, as well as to justify the need for an appropriate infrastructure. That is to provide interaction and feedback between
all stakeholders of the integration processes in the areas of agricultural education, science and business.

3. Results of research

It should be noted that, nowadays, the National Academy of Agrarian Sciences of Ukraine (NAASU) composes by 271 institutions, enterprises and organizations, including 11 national research centers, 32 Institute, 39 public research farms. The Academy employs about 25 thousand, of whom at research institutions – almost 9.7 thousand. Among them scientists are 4.6 thousand (including 341 people of doctor degree and 1636 – candidate of science degree).

Wherein, audit results of the Accounts Chamber of Ukraine during last 12 years show the number of doctoral dissertations in important for innovative progress industries decreased by 1.7 times. In some institutions NAASU up to 100 percent dissertations are theoretical and information about their actual implementation and cost-effectiveness are not available. At the same time, the state funds the National Academy of Agrarian Sciences of Ukraine up to 700 million hryvnia annually.

Guided by the right of self-determination of scientific topics and introducing competitive principles of their selection, NAASU academic institutions neither took into account the farmers’ demand for the latest developments nor commit an assessment of the commercial value and the possibility of a large-scale implementation. An illogical result of this system is that no necessary impact of NAASU activities on the development of the agricultural sector.

The situation with agricultural education is not less complicated. The Ministry of Agrarian Policy and Food of Ukraine manages 44 institutions of higher education of I–IV accreditation levels which are legal entities, including 20 higher educational institutions of III–IV accreditation levels, 2 academies and 18 universities (12 of them have a national status, 1 – research status ) and 24 institutions of I-II accreditation levels (schools and colleges). The total number of students of agricultural schools and colleges are 80.3 thousand persons, of which 64.6 thousand (80.5%) are enrolled in full-time training and 15.7 thousand (19.5%) – distance training. The state budget finances 47.9 thousand students (74.1%) and 16.8 thousand (25.9%) – are funded by individuals and entities. Total number of students of III–IV accreditation levels institutions is 125.3 thousand persons, of which 68.6 thousand students (54.7%) are enrolled in full-time and 56.7 thousand (45.3%) – in distance training. The funding of agricultural education is about 2.5 billion hryvnia per year. However, more than 90% of these funds are spent on salaries, scholarships and utility bills. As a result – it is an out-of-date material and technical base of educational institutions and, consequently, decreasing the quality of training. The latter is more frequent of agricultural producers’ complaints.

Obviously, the most influential negative factor of the current situation is the lack of a state policy of developing the agriculture as well as support for national agricultural producers, the interaction failure between all players in the sector of agri-
cultural production: the state controls - representatives of agricultural producers – science and education, where each participant acts itself and itself for itself. Moreover, the scientific support by NAASU and agricultural education of agribusiness is not decisive.

The concept of reforming and development of agrarian education and science, approved by the Government of Ukraine in April 2011, provides for the integration of academic and university agricultural science by reforming the agricultural universities and research institutions of the National Academy of Agricultural Sciences, using their capacity. It also takes into account natural and climatic zones of regional scientific and industrial training complexes as centers for teaching and research, staffing of agriculture of Ukraine. However, this initiative of the government is still unrealized. Also the approach is proposed in the Concept to reform the field of agricultural science and education appears to be quite limited, since the task of revitalizing the innovation processes in the agricultural sector of the national economy cannot be resolved without the need for effective integration of science and education with the sphere of entrepreneurship (Pro skhvalennia... , 2011). The solution of the problem necessitates the formation and implementation of appropriate mechanisms for cooperation between educational and research institutions, entrepreneurship, as well as public authorities.

With a view to practical implementation of the tasks, particularly, to ensure an effective integration of agricultural science and production, it is advisable to create a view of the natural and climatic factors, as well as the territorial specificity of regional agricultural research, educational and industrial clusters, which would unite the potential of scientific and educational institutions in their close cooperation with the industrial enterprises. As a pilot project, it is advisable to create Polesie scientific and educational-industrial cluster (Polesie SEIC), which will include Zhytomyr National Agroecological University with its structural units (ten schools and colleges) (Fig. 1).
These education units are located in three areas of the climatic zones of Ukraine Polesie, namely, Zhytomyr, Rivne and Volyn regions; Institute of Agriculture Western Polesie National Academy of Agrarian Sciences of Ukraine, which includes Volyn State Agricultural Experimental Station (Rivne and Volyn region); Institute of Agriculture Polesie National Academy of Agrarian Sciences of Ukraine (Zhytomyr region); Institute of Agricultural Microbiology and agro-industrial production of the National Academy of Agrarian Sciences of Ukraine (Chernihiv region).

The offered version of integrating research and educational enterprises meets the current system of economic and agro zoning of Ukraine, as well as the existing system of scientific support for agricultural production in regions is defined by the National Academy of Agrarian Sciences of Ukraine. Thus, according to the decisions of the Presidium of the National Academy of Agrarian Sciences of Ukraine of 18 May 2011 and 18 January 2012, the work on innovation in the agro-industrial complex of Ukraine is headed by Polesie Zonal Research and Innovation Centre for Development of Agro-industry, which operates within the Volyn, Zhytomyr, Rivne and Chernihiv region. Combining potential of scientific, educational and industrial institutions, enterprises, located in the Polesie region will provide the necessary conditions for innovation development of agro-industrial complex of the Polesie region on a new basis.

Such a union is quite logical and justified in many positions. Thus, the development of economic regionalization, carried out by the participation of leading scientists of the National Academy of Sciences of Ukraine in the 90s, had as a result an introduction of economic regions network into the draft Law of Ukraine "About the Concept of state regional policy", including the Polesie with Volyn, Zhytomyr, Rivne, Chernihiv region. It is scientifically proved that such a system of economic
Regionalization defines rational economic relations between economic entities, is able to provide a sustainable economic and social development and the improvement of regional economic governance.

In addition, in the 60’s of the last century, a group of soil scientists of Ukrainian Research Institute for Soil Science and Agricultural Chemistry named after Sokolovsky and other scientific institutions of the republic held agropedological zonning of Ukraine. The territory of Ukraine was divided into regions on the basis of similarities and differences in the soil cover with the whole complex of environmental conditions were relevant to agricultural production. The basic principle of such zoning was the specialization of agricultural industry in the republic. It was determined that the Ukrainian Polesie area occupies the northern and north-western part of the country and includes almost all of Volyn, Rivne, Zhytomyr, Chernihiv, northern areas of Lviv, Ternopil, Kiev and Sumy regions.

The proposed cluster, as an institutional mechanism for the integration of agricultural education, science and business can become a generator for the development of innovative enterprise (Fig. 2).

Fig. 2. The mechanism of interaction of agricultural science, education, business sectors and the state on the development of innovative business
Creating an effective infrastructure to ensure the implementation of research results in the field of agricultural economics, affects the need to use a number of mechanisms for the integration of scientific and educational spheres, as well as entrepreneurship, in particular the establishment of the financial institutions Agrotechnopark, business incubators, co-operative education, information and consulting services.

4. Conclusions

1. Ukraine has a pronounced direction of agricultural economic development, so the higher agricultural education and science are traditionally of high social importance. Formation of integrated structures in the form of scientific, educational and industrial clusters will contribute to the necessary conditions for the effective functioning the one of the key sectors of the economy – agrarian.

2. As a result of creating the Polesie Scientific and Educational-Industrial Cluster it will be able to manage a large number of educational and research institutions centrally. As a consequence, conditions for a significant concentration of material and human resources will be established to solve complex strategic tasks are focused on ensuring the effective development of the agricultural sector of the economy.

3. Creating, as a pilot project, Polesie Scientific and Educational-Industrial Cluster will provide an opportunity to optimize the financing of structural units are included in its composition; procurement of goods, works and services for their needs, as well as improving the commercialization of research results.

4. The proposed combination of educational, research and production facilities provides stimulating new technologies transfer from academic and research institutions directly into production. It will allow to consolidate the most efficient and to use the potential of science, education and industry, facilitating the agricultural sector conversion to the innovative development model.

References


MOKSLO, ŠVIESTIMO IR VERSLO INTEGRACIJOS MECHANIZMAI

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Įteikta 2014 09 05; priimta 2014 10 10

Santrauka


Raktiniai žodžiai: žemės ūkio mokslai, švietimas, verslas, integracija, inovacijų vystymasis.

JEL kodas – I25.