The role of the Institute of Agricultural Economics and Information in the Czech Agricultural Knowledge Information System

Marta Mrnuštik Konecňá

Marta Mrnuštík Konečná

Institute of Agricultural Economics and Information, Brno, Czech Republic
konecna.marta@uzei.cz

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Abstract: *Recent calls of society to farmers are more and more focused on the protection of nature and providing public goods. At the same time, the development of climatic change emphasizes a need for environmentally friendly farming. These requirements are reflecting in the numbers of new regulations and other restrictive and motivating measures. The farmers should be prepared to react to these challenges by acquiring an appropriate skill set and seeking for innovation. In order to support them, there is a need to provide a system where the farmer could get such skills and cooperate with research. This system has existed for years, and the EU started to call it the Agricultural Knowledge Information System. The quality of the services provided by the system depends on the innovation potential of each actor in this system. The Institute of Agricultural Economics and Information (IAEI) is one of the actors, and it is interesting for us to know: What is the innovation potential of the IAEI?. In this paper, we are mapping the current position and innovation potential of the IAEI by using desk research and semi-structured interviews. According to the desk research, the IAEI plays a significant role in the process of AKIS in the Czech Republic. It represents a position of a mediator and a coordinator in the whole range of activities. According to the semi-structured questionnaires, the description of the innovation potential of the IAEI is meaningful when it is divided into several categories. In general, the ability to react to actual challenges depends on the research interest of a few individual researchers. The Institute supports this ability by providing access to several information channels. The ability to use modern technologies is impro-*

ving thanks to new young employees. The recently established set of changes is the encouraging shift towards higher flexibility. Unfortunately, the administrative burden is still the primary barrier to innovation potential of the IAEI.

Keywords: *innovation potential, AKIS (Agricultural Knowledge Information System), advisory services, innovation in the institution*

Introduction

The recent calls of the society and development of climate change emphasize the need for environmentally friendly farming (Ministry of Agriculture, 2014). In addition, the EU strongly emphasized the need for the knowledge and information transfer of innovation to the farmers (agricultural enterprises). This trend is conceptualised in the AKIS (Agricultural Knowledge Information System), a construct which was developed by academics specifically interested in agricultural knowledge and communication. It is rooted in extension studies, science communication, interdisciplinary research and a range of social science disciplines (Roling and Engel, 1991; Hall et al,. 2006). The term is widely used in European policy documents, in the agricultural extension literature, and by international institutions (OECD, World Bank).

Also the Standing Committee on Agricultural Research AKIS (SCAR AKIS) uses the Röling and Engel (1991) definition of the AKIS in the recent report: "a set of agricultural organizations and/or persons, and the links and interactions between them, engaged in the generation, transformation, transmission, storage, retrieval, integration, diffusion and utilization of knowledge and information, with the purpose of working synergistically to support decision making, problem solving and innovation in agriculture" (Röling and Engel, 1991).

The PRO AKIS project described the AKIS in the Czech Republic in 2014. Regarding several changes during the last three years, we have to slightly adjust the scheme. The main change is the dissolution of the Agricultural Agencies, which were the interlinks between the Ministry of Agriculture (MoA), the agrarian NGOs, the National Rural Network and commercial bodies operating in the agricultural sector. The IAEI plays a significant role in the process of the AKIS in the Czech Republic (see the picture) as mediator and coordinator of a whole range of activities.

This position has been developing since 2002, when the MoA established the first regulation about the Accreditation of Advisors and the maintaining of their database. One year later in 2003, the MoA delegated the part of the accreditation rights on the Institute of Agricultural and Food Information (lately integrated under the IAEI). The delegated rights consist of control services[1], maintaining

[1] Innovation Union is an initiative of the EU which elaborates the aims of the strategy Europe 2020 in research, development and innovation section.

the database of the Accredited Advisers, and providing administration regarding accreditation by 1 January 2007. The aim of these changes was to ensure readiness for the obligated request of the established complex system of agricultural services at least for obligated GAEC (good agricultural and environmental condition) and requirements on cultivation. The next year the MoA established the National Council of Advisory Services for Agriculture and Rural Development.

The national support of advisory services terminated in 2007 and instead the support from the Rural Development Programme 2007-2013 started. Since approaching the new measure Advisory Services in RDP 2014-2020, no call for subsidies has been organized so far. Money allocated for the measure M2 (Article 14) – Advisory Services, were shifted to the measure M1 (Article 15) – Education.

Survey

Further in the paper, we would like to present the opinion of the main stakeholders to the Innovation potential of the Institute of Agricultural Economics and Information (IAEI) as a significant actor in the AKIS.

In the paper, we define the innovation potential of the IAEI as the ability to create, execute or provide the innovation and crucial information to the Czech AKIS. For mapping the current position and the innovation potential of the IAEI, we used desk research and semi-structured interviews.

The desk research was chosen in hope to receive a suitable methodology for evaluation innovation potential of an organisation. Unfortunately, the recent literature does not mention the Innovation potential of an institution. There are sources for the Innovation potential in a company (Žižlavý, 2009; Pittner and Švejda, 2004; Innovation Union[2], 2010) or in a region (Šavelová, 2010).

In spite of the lack of papers related to the Innovation potential in the institution, several papers refer to a similar concept. The closest concept of them is the National Innovation System also known as the National System of Innovation (thereby NSI), which tackles different approaches to support innovation in different states. Although the external international relationships play increasing role, mainly due to globalisation trend, the essential factor is also the influence of national education system, industrial relationships, technical and research institutions, government policy, cultural traditions and other national institution, as Freedmann (1995) claims. Similarly, Boulding (1985) states that the NSI is a social system related to the relationships among actors. Despite a large number of writings, the concept of the NSI is too vague to be used for particular methodology (Edquist, 2005).

Based on the literature, to create the innovation stimulation environment, the following common characteristics and features are:

[2] Innovation Union is an initiative of the EU which elaborates the aims of the strategy Europe 2020 in research, development and innovation section.

- Promoting excellence in education and skills development,
- Delivering the European Research Area,
- Focusing the EU funding instruments on the Innovation Union priorities,
- Promoting the European Institute of Innovation and Technology (EIT) as a model of innovation governance in Europe,
- Enhancing access to finance for innovative companies,
- Creating a single innovation market,
- Promoting openness on Europe's creative potential and capitalising it,
- Spreading the benefits of innovation across the EU,
- Increasing social benefits,
- Pooling forces to achieve breakthroughs: the European Innovation Partnerships,
- Leveraging our policies externally,
- Reforming research and innovation systems,
- Measuring Progress.

The final evaluation criteria come from the standing key initiatives (action points) of a Europe 2020 Initiative (Innovation Union, 2010). On the basis of the action points and the common characteristics and features, we selected the criteria for the **semi-structured interviews**. (See Box 1).

Respondents included in the research have consisted from advisors, coordinator of the advisory services, head of the institute, inner and external researchers of IAEI. The 17 relevant actors were asked to fulfil the questionnaire, only 11 actors responded fully, one respondent was dismissed due to incorrect values in the questionnaire, and 5 actors did not reply to our request.

The respondents were asked to set two values (in the range from -7 to 7) in each of selected criteria (see Box 1: Evaluation criteria). Firstly, they evaluated the current state of the criteria in the IAEI. Secondly, they evaluated the likely situation after five years. Above all, we ask the respondents to comment on their decision (to describe their premises or their point of view).

The desk research supports that the main parts of the AKIS in the Czech Republic are the Division of Education and Advisory services of the Ministry of Agriculture (MoA) of the Czech Republic, the Institute of Agricultural Economics and Information (IAEI), the National Rural Network of Paying Agency (NRN PA), research and educational institutions, non-governmental non-profit organisations (for example Agrarian Chamber) and advisors.

As shown in Figure 1, the IAEI plays a considerable role in this process since 1992 (Ministry of Agriculture, 2014). Agrarian NGOs and universities supporting agriculture by different means (mainly transfer of information) are upheld by the IAEI (see linkages a) and b) in the Figure) in information (software and database) in the form of professional assistance. The Ministry of Agriculture delegated a part of its implementing power, in the field of the AKIS to the contributory organisation of the IAEI (see linkage c) in the Figure). The duties of the IAEI are accredited by private advisory bodies that will operate in the Farm Advisory Sys-

tem (FAS) (see linkage d) in Figure 1. Other duties cover also providing basic information accessible for free to users about technological standards, methods and working instructions, norms and table data about sectors of agricultural production, marketing information, estimated developments of domestic and foreign markets, and other information which is important for decision-making by entrepreneurs in the market environment (see linkage e) in Figure 1.

Box 1. Evaluation criteria (Structure of the questionnaire)

1) Capacity of employees:
   - E-capability (using of cutting-edge communication tools),
   - Education policy of the IAEI (employee development),
   - Mobility (preparedness of employee for international cooperation and exchange stages);
2) Work conditions:
   - Rate of administration burdens,
   - Trust rate among employees,
   - Financial support of projects,
   - Technical equipment of employees (including software),
   - Rate of political influence;
3) Motivation to produce and present the outcomes:
   - Appeal of the job on the IAEI,
   - Evaluation system of research (external factor);
4) Services:
   - Information service for advisors / agricultural entrepreneurs,
   - Education system for advisors / agricultural entrepreneurs,
   - Capability of fast response to actual challenges.

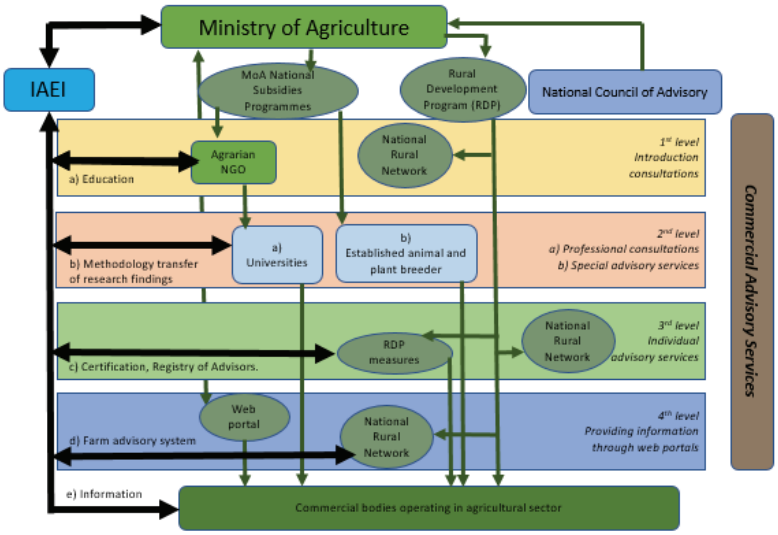

Figure 1. Advisory and Knowledge Information System in the Czech Republic

Source: actualisation of Pulkrábek and Pazdera (2014).

The missing methodology for evaluation of the Innovation potential of the research organisation as the IAEI leads to adopting the criteria of the Innovation Union (see Box 1). Our respondents estimated the level of the selected factors as follow:

Table 1. Research outcomes

Group	Factors		Current state	Future estimate
1) Capability of employee	E-capability	Max	5	7
		Min	-2	-3
		Average	**2**	**3**
	Education	Max	4	7
		Min	-2	0
		Average	**1**	**3**
	Mobility	Max	5	6
		Min	-5	-4
		Average	**-2**	**1**
2) Work condition	Administration	Max	0	2
		Min	-7	-4
		Average	**-4**	**-2**
	Trust	Max	6	7
		Min	-5	-5
		Average	**1**	**2**
	Finance	Max	6	6
		Min	3	2
		Average	**4**	**4**
	Equipments	Max	5	6
		Min	-5	-3
		Average	**2**	**3**
	Political influence	Max	3	5
		Min	-7	-5
		Average	**-1**	**0**
3) Motivation	Attractiveness	Max	3	5
		Min	-6	-3
		Average	**0**	**1**
	System of research evaluation	Max	5	7
		Min	-2	-1
		Average	**1**	**2**
4) Services	Providing information	Max	4	7
		Min	-7	-6
		Average	**1**	**2**
	Education services	Max	3	5
		Min	-6	-5
		Average	**-1**	**1**
	Flexibility	Max	5	7
		Min	-3	-5
		Average	**1**	**2**

Source: own survey.

The capability of employees: E-capability has increasing trend thanks to the new young employee. Education and mobility are related to the individuals who are willing to self-develop. Generally, the current employees have middle/low level of language skills.

The work condition: Administration is perceived as the most influential negative factor diminishing energy and time to develop and spread innovation in the IAEI. Unfortunately, there is low chance to improve this factor due to direct linkage to the MoA. Trust among researchers is different according to respondents' experience. Someone feels the trust among few persons while the rest of the Institute is taking precautions to defence themselves. The other perceived trust as sufficient for cooperation among employees. Financing is sufficient according to our respondents. This factor was evaluated as the factor with the highest contribution to the potential of the IAEI to spread innovation in the AKIS. The respondents remark that the equipment should be improved especially for the research department to be able to fast react and analyse. The diffident evaluation was in case of political influence, on the one hand, the IAEI is funded by the MoA, on the other, it has sovereignty to lead its research and services.

Motivation: Low wage in the public institutes (especially in the first year) keep low attractiveness of the IAEI job for the high quality new young employee. Global press on numbers of publications instead of quality is not supporting the spreading of innovation. The respondent marked the factor of research evaluation by low value.

Services: Spreading information by web, publications and seminars are getting better in last months. Providing education is influenced by low interest of advisor due to low financial support. Stress on flexibility causes obvious improvement and increase in the IAEI potential.

For numeric evaluation, please see Table 1 with maximum, minimum and average values for each factor.

Conclusion and Recommendations

The IAEI keeps an essential role in advisory services mainly regarding compulsory and administration requirement. The capability of the IAEI employees is mainly related to the individual workers who are active and willing to use the possibility to keep up with the new research trend. In general, the capability of employees is increasing. Working condition and motivation have been improving thanks to the interventions made by the current chief of the Institute. New activities established in the last year are also supporting an increasing level of provided services. Enormous potential for development and transferring information and innovation in AKIS in the close cooperation among all IAEI departments (Advisory Services Department, Research Department and Agriculture Library and Information Services).

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