

REGIONAL NETWORKS SUPPORTING INNOVATIONS – THEORETICAL STUDY

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Abstract

Region of knowledge and innovation is the region that builds economy based on knowledge, this is „learning” region, which has regional innovation strategy and efficiently operating regional innovation support system. In the world’s economy, innovations are the basis of modern strategies for economic growth, development of enterprises and forming the prosperity and well-being of the nations. We can notice dynamic movement of structures of well developed economies into direction of industries and services basing on knowledge. In perception of innovation and innovation process, there is a departure from single event in favour of complex of phenomena and events creating new products, processes, technologies and services. Innovation processes run in specific system of relations including networks of enterprises, scientific-research institutions and public administration. In the same time we can see bigger and bigger role played by the correlations occurring between dynamics of creation and development of innovative enterprises, and organization of regions and availability of specialised financial instruments. Factor that decides about competitiveness of enterprise is innovation, while the pace of changes in engineering, technology and organization causes that only the enterprise capable to introduce innovative changes can survive and stay on the market. In the times of building the economy based on knowledge, all enterprises, even these smallest ones, are under strong pressure of innovations, frequently in many disciplines/areas in the same time (new products, processes, techniques and technologies, organization, relations with customers and suppliers). Effectiveness of entrepreneurs within that range depends in big degree on their competences, management skills and assumed strategies. Scientific researches point out growing role of environment, in which the enterprises are functioning. Very important are also assumed system solutions that determine general frames for functioning of the economy (regional innovation systems). Regional innovation system is complex, territorial and system view on problem of innovativeness of the economy. Its functioning favours reduction of innovation risk for specific business subject, makes it easier to absorb different kind of knowledge, provides possibility for interactive learning and exchange of experiences. It is a base for building the competitiveness of given region in times of global economy, where innovation, knowledge and learning process are the key factors for economic success. It allows for adaptation of regional economies to globalisation process. In Poland regional innovation systems are weakly developed, because process of their building in organizational dimension has been started just recently.

Key words: regional networks, innovation

Introduction

Regional network connections are the concepts fitting into the stream of system approach to innovativeness in spatial dimension. They include subjects representing entrepreneurship, institutional surrounding of business and units from scientific-research zone.

Innovation networks assume more or less formal character and they are identified with organizational structures oriented for generating innovations. Therefore it is possible to distinguish categories of innovation networks based on more formalized cooperation agreements, such as partnership agreements concerning jointly realized research-development works or commercial agreements concerning exchange of results of research works.

Innovation connections are being also created by financial involvement of enterprises in form of direct investments or licensing of technologies. Less market dimension is assumed by

innovation networks, which were formed in result of jointly appointed research associations, as well as the networks established in purpose of participation in research programs financed with public means. The networks supported thanks to informal exchange of knowledge between enterprises by means of scientists and engineers employed in these enterprises have other, informal character.

Innovation connections networks with special character are institutionalised mechanisms of research-development cooperation involving partners coming from industry and science sector. They include, amongst the others, scientific-technological parks, technological incubators and technology transfer centres. This type cooperation innovation networks have in purpose first of all to stimulate transfer of knowledge from research-development sector to industrial sector and because of that they provide many mecha-

nisms allowing for easier process of know-how transfer and knowledge commercialisation.

Economy based on knowledge

Fundamentals of economy based on knowledge were initiated together with acceptance of Lisbon Strategy, having in purpose to create on territory of Europe the most competitive economy in the world.

Economy based on knowledge is the economy, which can be characterised by fast development of fields connected with processing of information and development of science, mainly these branches of industry that are included to so called high technology, as well as techniques and services of information society. Economy based on knowledge can be distinguished by a few substantial features: investments in researches and development, increase of importance of export and international connections; in knowledge based economy there is a growth of employment in branches, which intensively use the knowledge, a new type of enterprise is appearing – enterprise based on knowledge, high share of service sector in employment and Gross Domestic Product, formal and informal connection networks play significant role here, non-exhaustiveness of knowledge.

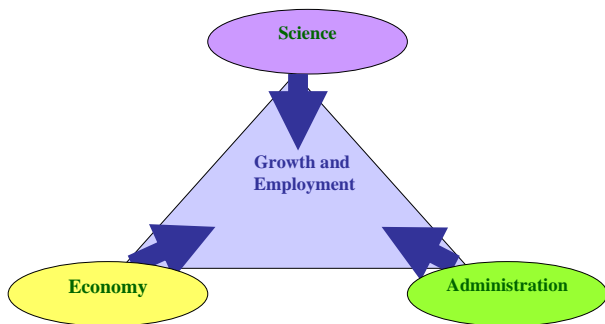


Fig. 1. „Golden development triangle”

Scientific studies about economy based on knowledge started to appear in the middle of nineties, where The Knowledge-Based Economy is defined as: economy directly based on production, distribution and use of knowledge and information. This means that the knowledge, in the view of such formulated definition, is important factor determining the pace of development and level of economic development. In knowledge-based economy, economic growth does not depend on a few key branches of economy, such as agriculture or mining industry, but it depends on all branches, which have to vastly use the

knowledge in processes of production and providing services. This is the economy taking advantage of knowledge, creativity, and technology for producing the products and services. Key for realization of this goal is innovation.

Development of economy based on knowledge generates development of new type of society – knowledge-based society. In forthcoming decades, existence of the Polish nation and society as opposed to past centuries will not depend on military power, but it will depend on economic power. Economic power in turn has its source in resources of knowledge, which will be gained and used by the society.

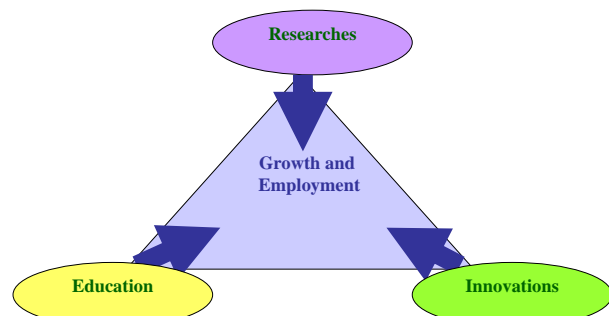


Fig. 2. „Golden knowledge triangle”

Investing in knowledge in scale of the whole economy applies to relatively easy to catch investments in: computer software, research and development (R + D), education (including schooling), continuing education, IT technologies, investments in sector of high technologies, including foreign investments. Wisely planned investments in knowledge, including first of all investments in education are economically profitable.

The Knowledge-Based Economy in regional meaning is being built using for that the models of learning region, local pro-innovative environment, clusters or regional innovation systems. Regional development policy realized by European Union countries includes assumptions of these concepts.

Key factors for learning processes – transferring the knowledge, sharing it with others and creating innovations, are the cooperation and trust growing up from cultural context and from local environment.

The main assumption of innovative environment concept is a claim that source of innovation is not an enterprise, but first of all local environment, in which it is functioning.

Such type structure with organic character reinforces local innovativeness by collective

process of learning. Innovativeness is perceived as integration of information and resources by local environment. One of the elements of innovative environment are strong territorial and institutional structures, which form an instrument necessary in management process and create climate connected with learning. The most important interest point of innovative environments is supporting local synergies. Hence territory is perceived both as the reason and effect of synergy of the players and collective learning processes. Further works over innovative environment concept came to fruition with appearance of better established and more practically used theory of regional innovation systems. We define Regional Innovation System as network of cooperation between organizations and institutions operating in given region, which goal is to develop the innovativeness of that region by supporting innovative potential of the enterprises. Another words we can state that RIS, which is an abbreviation from Regional Innovation System, is a flexible, creative and regional socioeconomic system with the widest possible connections, which takes advantage of local attributes and resources that decide about production and product in adequate way to the peculiarity of local market.

Learning region

Approach stressing out a fact that enterprise competitiveness factors arise first of all in conditions of regional development was defined with term of learning region. Role of public authorities is underlined here, which task should be to stimulate all factors responsible for development of science, researches, improvement of human resources and applying high technology in enterprises of learning region.

The main driving force of learning region is continuous innovation and skills to adapt to changing market conditions.

According to OECD, model of learning region sets a direction, in which regions should follow for effective reaction to challenges resulting from appearance of learning economy. Key issue for learning region is an ability to be flexible and support interaction including exchange of knowledge between various subjects in region in the face of changing economical circumstances. Learning region can be characterised by regional institutions, which facilitate individual and organizational learning by coordination of flexible networks including economical and political sub-

jects. Regional networks creating learning region are not restricted to business subjects, but they also cover social, political and institutional animators, where transferring information and knowledge is natural and frequent process.

Learning region concept is based in special way on assumptions of dynamic interactive models of innovation process. Process approach to innovation has grown up on the basis of criticism towards traditional linear mode of innovation „pushed“ by science or „pulled“ by the market. Innovations are understood as interactive process occurring between the companies and scientific infrastructure, also between producers and users on inter-organizational level as well as between the companies and wider institutional environment. That is why innovation process should be perceived as interactive learning process, in which various institutional mechanisms play a great role.

The networks are the main learning source, though. According to assumed interactive innovation model, innovation processes in the region run by networking rather than as a part of hierarchic structures and markets. Therefore for realization of learning region concept, similarly as in case of systems of innovation and clusters, regional dimension of networking phenomenon is of the key importance.

As basic attribute of learning region we can assume regional innovation networks perceived as effective mechanism of collective learning and generating innovations.

Innovation networks focus formally independent organizations under long term relations implicating exchange of information, interactive learning process and direct cooperation. Network forms of management are more preferred from the markets and hierarchic structures, because they provide more flexibility and more enduring and effective base for coordination of common actions, what can not be found in anonymous market relations. It is also worth to notice here, that despite of justified associations and similarities between innovation networks and innovation environment, abovementioned concepts have to be distinguished. Innovation network is organizational system of cooperation and exchange established in purpose of development of knowledge, products and services. Whereas innovation environment it is existing ability of the region in more institutional dimension, which leads to development of innovation networks.

Innovation networking process assigns significant role to specific social norms. Innovation networks can develop only in presence of required minimal level of mutual trust. In consequence it is admitted that innovation networks are always socially conditioned. The networks function the best as innovation social organisms in situation, where they take advantage of different areas of silent knowledge coming from regional actors, such as: associations, enterprises and business surrounding organizations. It happens this way, because exchange of silent knowledge requires more trust and culture understanding of developing ones thanks to geographical nearness.

So that is why non-profit type organizations should be the catalysts for innovation networks, because they are usually the most trustful units. Such organizations, as for example regional development agencies, are to fulfil here a function of regional animator responsible for facilitating interactive processes between the enterprises and research-development zone. It confirms the legitimacy of assumed claim about important role of social capital and non-economical interdependences in coordinating the proceedings in regional economy. Taking advantage of knowledge flows in spatial dimension as mechanism stimulating innovation ability of the region is also emphasised from the perspective of creating effective innovation systems. It is based even in bigger degree on theory of systems and role of social networks in knowledge flows and creating innovations in region. There are attempts to combine the groups of terms mentioned above into one whole unit presenting them as subsequent stages of regional development – from innovation cluster through the learning region, to the highest form of development in form of regional innovation system.

Innovation system concept is a higher stadium of concept of innovation networks, learning region, local innovation environment and clusters.

Learning regions is perceived as especially effective type of regional innovation system. Regional innovation system is based on flexible network systems, which generate the basics for innovativeness of region's economy. It has to be remembered that idea of regional innovation system has grown up based on innovation system concept with bigger range, defined in scale of the whole country and determined with the name of National Innovation System.

Regional innovation systems

Regional innovation system concept is based in its assumptions on evolutionary technology change theory. Justification of above-mentioned thesis are two basic preconditions that allow to notice the relation between evolutionary economy theory and idea of innovation system:

Innovation is an interactive process occurring between the enterprises and scientific infrastructure, between various functions in the enterprise, between producers and users on inter-organizational level, as well as between the enterprises and wide institutional environment. That is why innovations should be perceived as interactive learning process, in which wide range of institutional mechanisms has important role to play.

Based on assumptions mentioned above, wide concept of innovation system was built that takes into account both economical dimension of innovation process and social character of this process. Hence the essence of such system is cooperation and synergy of various categories of regional stakeholders in processes of creating and using the knowledge. Necessary condition for effective functioning of the system is existence of well formed social relation networks between all actors taking part in regional innovation processes.

As it has already been mentioned earlier under characteristics of innovation networks and learning region concept, also innovation system concept is based on assumption, that interdependences between the actors of innovation process affect its dynamics and in result they have impact on competitiveness of given location. System is dynamic and it is subject of continuous evolution, and one of more important factor affecting its development is learning ability of individual units and system as the whole thing. Innovations rising under the system are the result of interactions and feedbacks occurring between the actors engaged in creation, transfer and using different type of knowledge. That is why number of institutions involved in functioning of innovation system is so important as well as institutions that increase the number of access channels to external sources of knowledge. Such subjects are included into process of creation and distribution of knowledge under the system as: universities and higher schools, research-development units, technology transfer

centres, technological parks, business surrounding institutions, etc. Effectiveness of gaining and taking advantage of knowledge of these institutions has influence on successes of the enterprises. Therefore regional innovation system should be perceived in categories of cooperating organizations involved in process of creating, diffusion and taking advantage of knowledge and innovations in the region.

Innovation system in regional dimension is public-private cooperation forum of business world, local self-government and national administration, scientific-research and educational institutions as well as non-governmental organisations allowing for activation of local growth factors and making better use of the resources. Innovation system is flexible socioeconomic system with wide connections, which is capable to take advantage of local resources and factors determining production processes, adequately to peculiarity of regional market. Whereas it should be stressed out that it is not possible to define one universal model of such system.

Under innovation system the innovative enterprises come into mutual interactions with their suppliers, customers as well as competitors, thus creating one of the pillars of system – zone of entrepreneurs. In the same time the enterprises cooperate with scientific-research sphere responsible mainly for creating new knowledge

about market potential. This sphere includes wide spectrum of research-development institutions and universities, which are the source of technological services, scientific solutions as well as advisory and education. The third pillar of innovation system, or another words its subsystem, is formed by local and regional development institutions, which fulfil a function of some kind of catalyst for the whole system. Institutional backup of system is formed by non-profit organizations and the ones that realize regional entrepreneurship support program.

They support the transfer and commercialisation of technological knowledge, create friendly mechanisms for establishing new innovative enterprises, and also they could provide higher risk financial aid in favour of innovative undertakings.

Conclusions

1. Theoretical considerations give the grounds to keep the thesis, that implementation of innovation policy on region level is more effective than on country level. Regional innovation system concept is not in contradiction with cluster model. On the contrary, it provides excellent complement and can be successfully used in creating regional development in regions under restructuring period.

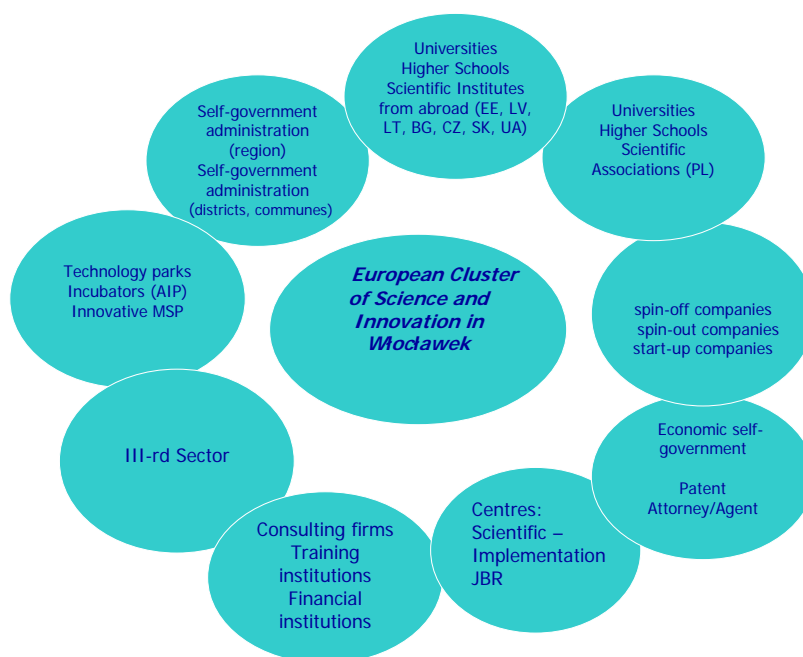


Fig. 3. Sub-regional Innovation Support Network - On example of Kujawy and Dobrzyn Land Region, Poland (own elaborations)

2. Partnership of participants of innovation processes in Polish regions is very weakly developed. Actions of supporting institutions are ineffective or inadequate to the role, which they should fulfil. Coordination of innovation processes in practice does not exist.
3. European regions, by their experience, point out the advantages coming from following the experiences of other regions and external experts both on stage of researches and in process of formulating region innovation development strategy.
4. Recapitulating it can be noticed that in theories explaining regions' development mechanisms, the factors responsible for the growth evolve from so called hard ones (often infrastructural and quantitative) towards soft ones – qualitative, the most often dependent from human capital, social capital, quality of services, image of the unit, etc. Therefore the theory seems to follow the reality in that matter, however there is one essential problem – problem of identification and reliable measurement of human capital on regional level.

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