

NETWORKING IN KNOWLEDGE ECONOMY (PART I)

Associate Professor PhD Piotr Pachura, Czestochowa University of Technology, e-mail:
piotrpachura@o2.pl

ABSTRACT: Networking and network process are one of the most inspiring theory in socio-economic science during last years – when knowledge and information are most important. An economy based on knowledge is one directly based on production, distribution and the use of knowledge and information. The notion of a knowledge-based economy should be understood first and foremost, as the definition of a modern stage of economic development, where knowledge is understood as the ability to act and play a decisive role in stimulating social and economic development.

Keywords: networks, knowledge economy, innovations, regional development

JEL Codes: B41, C80, O30

The approach to the development and competitiveness of regions can be seen on the basis of examining economic concepts, starting from classic economics (Smith, Ricardo). In the classic economic theories, competitiveness was associated with the phenomenon of the *division of labour* which provides for economies of scale and differences in productivity across nations. In the concept by Ricardo on the basis of the phenomenon of *comparative advantage*, the fundamental meaning connected with competitiveness referred to the benefits of international trade gained by particular countries. Similarly, in neo-classical theory trade is deemed to be the engine of growth. Furthermore, it is deemed that free trade will equalise the prices of output, goods and, in turn, the prices of the factors of production (capital and labour) will also be equalised between countries.

Whereas classic economists treated capital and labour as two independent production factors, the Keynesian theory assumes capital and labour to be complementary. The Keynesian theory assumes that governments can successfully intervene in the cycles of the economy. This theory is of greater importance in the case of the policy of creating competitiveness of regions as state interventionism is evident and the convergence of regions can be achieved through economic policy.

In more contemporary theories of macro-economics, it is possible to find many more references to the question of shaping the competitiveness of regions. In the concept of *development economics* which is associated with *centre-periphery models*, the competitive advantage of “central” regions is most often rather long lasting and is catching up in terms of productivity which in the case of the ‘central’ and ‘peripheral’ regions is a slow process. As *development economics theorems* underline the lack of balance in the development of regions, foreign direct investment is of great significance in the process of convergence as regards regions. Economic policy plays an important role in determining regional success.

In the past decades the theory based on accumulation and the use of knowledge, frequently called the *endogenous growth theory* has been popular. Endogenous growth theory purports to provide a theory of economic history, in the sense that it tries to explain why some economies have succeeded and others have failed. The key assumption of the endogenous growth theory is that the accumulation of knowledge generates technological progress and economic growth. It is therefore acknowledged that investments in human capital and research and development are crucial for regional endogenous development. The consequences for policy makers are for instance, the

balance between spreading knowledge on the one hand, and protecting intellectual property rights on the other, in order to maintain the level of investments in R&D.

Aside from the theory on a macro-economic level, there are many theories associated with the explanation of the phenomenon of competitiveness operating at a micro-economic level which is of an interdisciplinary nature and is associated with such disciplines as sociology or economic geography. One of the most influential theories is Michael Porter's *cluster theory*. This theory is based on local competitiveness and the context of the global economy. In accordance with this theory, in order to be competitive, an organization must continually improve the operational effectiveness of their activities and simultaneously strategic positions in the global economy. This assumption leads to the necessity of running a business activity at a local level while at the same time accepting a strategy of competitiveness at a global level – the effect of which is the creation of geographical clusters.

Another approach to the creation of competitiveness in a region is that which is based on the theories of economic geography, particularly the theory of locating business activities. The *Marshallian industrial districts* and the theorems of the economies of location are worth mentioning here. The formation of localized concentrations of industrial specialization is a part of the organic and organizational development of the industrial economy. Marshall attributed the competitive success of key industries to their tendency towards geographical localization, and in turn industrial specialization as key to local economic success. Specialized industrial localization – consisting of various interactions fostered by inter-firm specialization and division of labour, the growth in the number of specialist suppliers, intermediaries - serves to reduce transaction costs, and promotes competitive advantage in the local production system. Furthermore, in this approach, knowledge and know-how are accumulated and become locally socialized into a local industrial “culture” and local “innovative environment”. In contemporary times, the phenomenon of the *collective learning processes* is also underlined as the creation and application of innovative and entrepreneurial knowledge for the creation of a regional economic advantage.

Collective learning processes are simultaneously becoming a factor in the creation of the system of knowledge in a region, as well as an element in the process of creating a vision and aims for developing a region. Furthermore, with regard to the variety of approaches and interests of particular groups of regional players (institutional, business, social etc.), the common activity constitutes an element in the creation of trust as an element in the social capital of a region.

Innovation is seen as an interactive learning process that requires interactions between a range of private and public regional players. The abilities of a firm to adapt innovation and knowledge are determined by its surroundings: its partners, competitors, customers, the human capital available, the regional knowledge infrastructure and institutions.

The increasing significance of the processes of knowledge and high level of IT in the modern market has become the stimulus for the shaping of such notions as: an economy powered by knowledge, information economy, information society, which is generally used with the aim of systemizing the phenomena that started in the 1950s. The arrival of a new era in the history of economic development – an economy based on knowledge, forced the players on the European and global markets to change their way of thinking to that of socio-economic activity, particularly in the area of gaining competitive advantage and striving towards socio-economic coherence by integrating the spatial structure. The necessity of adjusting to the conditions of a new economy was encountered by global corporations, individual enterprises functioning on a regional scale, as well as local authorities responsible for the shaping of regional policy in response to the new challenges of a global knowledge economy.

An economy based on knowledge is one directly based on production, distribution and the use of knowledge and information¹. The notion of a *knowledge-based economy* should be

¹ “*The Knowledge-based Economy*”, OECD, Paris, 1996, page. 7.

understood first and foremost, as the definition of a modern stage of economic development, where knowledge is understood as the ability to act and play a decisive role in stimulating social and economic development². Such an approach to the interpretation of this notion seems to be appropriate and allows us to notice that knowledge had been an important factor of economic growth prior to the emergence of economic models that are directly involved with knowledge as the fundamental factor of economic development.

The knowledge economy is seen by the World Bank in a similar way, which defines this notion of a market availing of knowledge as the key engine of economic growth. It is an economy in which knowledge is acquired, created, spread and effectively used with the aim of supporting economic development³. The proposed theoretical concepts concerning the knowledge market are first and foremost aimed at explaining the roles of knowledge-derived resources and activities in stimulating productivity and economic development. Factors conditioning the economic success of enterprises and countries are much more dependent on the abilities of creating and using knowledge than ever before.

The necessity of referring to the essence of the knowledge economy is due to the attempt to set the appropriate context for the considerations at hand, as the natural attribute of the knowledge economy is understood in the wide ranging scope of a *network paradigm*. Therefore, it appears to be justifiable to define the modern economy as a network economy. On one hand, the modern economic area is being filled with network ties in global terms, but at the same time the role of local networks which constitute a defence mechanism against the negative effects of economic globalization.

The competitive potential of an enterprises is the function of the resources accumulated in the network in which the enterprises participates, the position it occupies in the network, as well as the abilities to mobilize these resources⁴. This is a notion that is representative of the economic concept of M. Bratnicki, that is seen as a specific form of interactions between various economic units in which the enterprises in question, as a part of the whole gain an advantage in the flexibility of activities and increase their competitiveness. The author defines the notion in economic terms as “the geographical concentration of mutually connected enterprises and institutions in a given area of business which represent a new type of spatial organization located between risk and hierarchy”⁵.

The network organization is a modern form of organization that illustrates the way of organizing mutual ties between firms or units of an individual enterprise. Its existence was possible thanks to the reduction of transaction and transportation costs as a result of the resolution in telecommunication and forwarding technologies. However, the network organization also means a new style of management and a new form of organizing relations between companies. The fundamental basis for the ties between the network elements is at least the partial collectivity of the aims, the realization for which particular elements voluntarily entered the network as network elements. Such a network can be formed by separating and significant independence of the elements of the organization or a combination of small organizations whose independent operations would be too problematic to maintain its position on the market. In this way they combine to increase their competitive strength by being able to counteract the activities of even large corporations.

From a theoretical point of view, the network constitutes an unquestioned hierarchy as a way of regulating events. Striving towards the reduction in the significance of the hierarchy as a

² „*Innowacje i transfer technologii. Słownik pojęć*”, (Innovation and technology transfer. Dictionary of concepts) PARP, Warszawa 2005, page 57.

³ Derek H.C. Chen, Dahlman C.J., “*The Knowledge Economy, The KAM Methodology and World Bank Operations*”, The World Bank, Washington, 2006, page 4.

⁴ Sławecki B., „*Kapitał społeczny organizacji a koszty transakcyjne*” (*Social capital in an organization and transaction costs*), Januszek H., edit. „*Kapitał społeczny we wspólnotach*” (*Social capital in communities*), zeszyty naukowe no. 58, Wydawnictwo Akademii Ekonomicznej w Poznaniu, Poznań 2005, page 322.

⁵ Bratnicki M., „*Rola kapitału społecznego w tworzeniu wartości przedsiębiorstwa*” (*Role of social capital in the creation of value in an enterprise*), Humanizacja Pracy, no. 2-3/1999, page 22, [from:] Sławecki B., as above, page 322.

mechanism for regulating activities and integrating the organization causes the replacement of vertical communications and ties of giving orders and checking by horizontal ties. In such an organization the creation of an interpersonal network between employees is promoted, which supports the processes of the corporation. Thanks to the weakening hierarchical dependence and structures of the authorities, the level of flexibility and adjustability, as well as support for entrepreneurship are all increasing. The interactions between the elements of the network structures are therefore nothing more than channels of direct communications for people focused on a task and not authority. This facilitates the fast acquisition of knowledge and the multiplicity and mutuality of the transmission of information is the basis of cooperation and existence of the network. The interactions between partners and market mechanisms constitute an integrating element and external competitive pressure on the part of the organization that wants to connect with the network which causes the reduction of the prices offered for goods and services between partners. Such a solution favours the reduction of general costs and increases profitability by increasing competitiveness. The partnership of a network organization is based on mutual trust, common ideology and reputation. The discrediting of these elements can lead to the exclusion of a partner from the network or even the disintegration of the network itself.

In the afore-mentioned statement the interpretation of the knowledge economy by Castells is applied, in which in his opinion this market describes three mutually connected aspects: firstly, it is an economy concentrated on knowledge and information as the basis of production, productivity and competitiveness of both enterprises and whole regions, cities and countries. Secondly, an economy based on efficiency derived from knowledge and information which is global. The third factor which is essentially associated with the two previous ones is that of the *network economy organization*. These are decentralized networks from within enterprises, between enterprises and the networks of SMEs of dependent enterprises (subsidiaries of large corporations). In such an economy thanks to the networks, it is possible to facilitate extraordinary levels of flexibility and ease of adjustment. Therefore, it is an information based, global and organized economy within a network, in which one element can not function without the other⁶.

The *network* can be acknowledged to be a particular set (collection) of autonomous organizations that possess direct or indirect relations resulting from agreements (alliances) between the group participants. The purpose of the network is to gain a competitive advantage for particular participants of the network and frequently for the network as a whole. The feature of the network is the possibility of defining its borders (although frequently difficult), whereas the key phenomenon in defining the network is that the relations between enterprises within the network are greater than the relations between members of the network and external organizations (with relation to the network). Another characteristic feature of the network is the independence of the network organization members and their autonomous economic aims, which can be achieved thanks to participation in the network. The key phenomenon that occurs in the network is the *network effect*, or in other words, the impact (negative or positive) of the network on particular members (organizations, enterprises). The *network effect* can involve the following phenomena (fig.2): strategic dependence involving the restriction of strategic choices of the network participants; selection of partners resulting from the "adjustment" (*network fit/network fitness*)⁷, diffusion of knowledge within the framework of the network (referring to good practices, particularly in the sphere of management); minimization of technological risk (participation in the network provides better opportunities of availing of the leading technologies); *positive feedback* which means for instance, availing of the economies of scale.

⁶ Castells M., „*La ciudad de la Nueva Economía*”, Papeles de Población, enero-marzo, nr 27/2001, Toluca, Mex.: UAEM, [za:] Różga Luter R., „*Gospodarka oparta na wiedzy a rozwój regionalny na przykładzie Regionu Środkowego Meksyku*”(Economy based on knowledge and regional development in the example of central Mexico), *Studia Regionalne i Lokalne*(Regional and Local study), No. 1 (15)/2004, page 31.

⁷ Concept of *network fitness* presented by among others, Ard-Pieter de Man, Koen Franken and others.

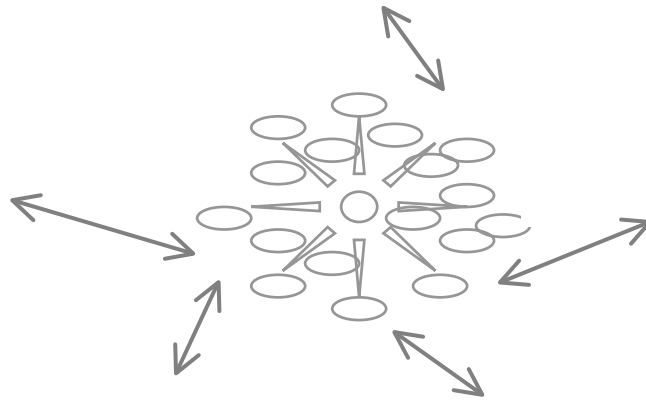


Fig. No. 1. Elements of the "Network effect"

In accordance with the concept of *networking* an enterprise should possess an increasing level of abilities to cooperate with external partners such as universities, research units, or competitors that possess special skills. External cooperation facilitates the access to resources of particular knowledge which can be generated by internal structures of individual organizations. The network of cooperating units constitutes a central location of innovation as it provides knowledge and other inaccessible resources for individually operating organizations at the right time.

The dynamic ability to learn in an organization which generates a competitive advantage should therefore transgress organizational barriers. The functioning of the organization within the network of inter-organizational ties is seen as an important element in the organizational process of learning as the units learn through cooperation with others, as well as observation and adopting good practices from others. Enterprises do not gain their skills in isolation but discover, assess and learn from their implementation during the course of cooperating with partners of exchange. The ability of the organization to compete is the quality function of international ties and the learning abilities provided.

The functioning of the enterprises within the framework of inter-organizational networks of cooperation brings specific results in the area of their innovativeness. The ability to generate innovation through cooperating organizations is to a large extent dependent on the type of ties and position held in the network. The value of the enterprise comes from its participation in the network, but however, the amount of social capital accessible for companies is determined by its position within the structures of the network. Therefore, the organization can gain value through the ability to create and use the knowledge acquired thanks to participation in the network. The network structure is defined by appropriate mechanisms and types of interactions which have an impact on the quality of relations and simultaneously, on the value gained by the organization.

Analysis of the mechanisms and factors of creating network structures of interaction and their transformation have great significance for the effective management of development of enterprises (participants or future participants of the network of interaction), regions and countries. The main course of research for network structures is associated with analysis carried out from the point of view of an enterprise (or a network participant in general). Scientific work is less advanced in the case of the mechanisms of creating and transforming networks in a spatial sense, as well as comparative research on the aspect of creating and transforming the network structures in various

regions/countries with the aim of identifying the factors of success of particular participants of the network and the network itself.

It is increasingly stated that the notion of innovation includes everything that is connected with the creation and application of new knowledge with the aim of achieving a comparative advantage. In this sense, innovations apart from technology of course refer to economics, society and culture. Traditional approaches of science towards organization and management are insufficient to explain and manage the development of enterprises, as well as regions and countries. The modern economy called post-capitalist by P. Drucker requires a new approach to the challenges of development as the "individual act of innovation" which is no longer sufficient as innovation must be of a continuous nature. Therefore the core of the modern economy is becoming the network structure. The feature creating the network ties is most often their spontaneous and chaotic nature. With relation to this, a large role is attributed to the administrative environment as a "catalyst" and participant of the network of interaction. Moving away from the way of thinking that defines innovation as a linear process: science (basic research) - innovation (initiation) - commercialization, the direction of the paradigm of *continuous innovations (innovativeness)* requires a different view, frequently radical changes in thinking. If innovativeness is the following: constant process of the flow of knowledge and its creation, then the factors defining the effective functioning of the network structures are becoming more significant.

References:

1. Bratnicki M., „*Rola kapitału społecznego w tworzeniu wartości przedsiębiorstwa*” (*Role of social capital in the creation of value in an enterprise*), Humanizacja Pracy, no. 2-3/1999,
2. Castells M., „*La ciudad de la Nueva Economía*”, Papeles de Población, enero-marzo, nr 27/2001, Toluca, Mex.
3. Derek H.C. Chen, Dahlman C.J., „*The Knowledge Economy, The KAM Methodology and World Bank Operations*”, The World Bank, Washington, 2006,
4. „*Innowacje i transfer technologii. Słownik pojęć*”, (Innovation and technology transfer. Dictionary of concepts) PARP, Warszawa 2005,
5. Różga Luter R., „*Gospodarka oparta na wiedzy a rozwój regionalny na przykładzie Regionu Środkowego Meksyku*” (*Economy based on knowledge and regional development in the example of central Mexico*), Studia Regionalne i Lokalne (Regional and Local study), No. 1 (15)/2004,
6. Sławecki B., „*Kapitał społeczny organizacji a koszty transakcyjne*” (*Social capital in an organization and transaction costs*), Januszek H., edit. „*Kapitał społeczny we wspólnotach*” (*Social capital in communities*), zeszyty naukowe no. 58, Wydawnictwo Akademii Ekonomicznej w Poznaniu, Poznań 2005,
7. *The Knowledge-based Economy*, OECD, Paris, 1996,