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## Integration processes in managing innovations in a region

Innovations are elements of organization's activity, which determine its character and successes. Management should understand the fact, lying at the heart of the modern management of innovations, that there is no single miraculous means to achieve success in innovation management. Certain prerequisites of special importance can however be set out:

- innovation entirely succeeds only when its introduction is supported by the whole organization,
- effective innovation is based on strategy, hence the necessity of integration of innovations with the general strategy of the organization,
- the success of innovation depends on effective relationships between weak and strong sides of the company with the environment,
- the success of innovation requires, on the part of the organization, launching mechanisms of making changes, including building a network model - based on information technology,
- the success in managing innovations is based on the organization's capability of learning and repeating similar behaviours.

The aim of this paper is to consider the role of integration processes in managing

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innovations in łódzkie voivodeship during the 2007-2013 period in the context of 2030 strategy objectives.

## 1. The Concept of Integrated Innovation Management

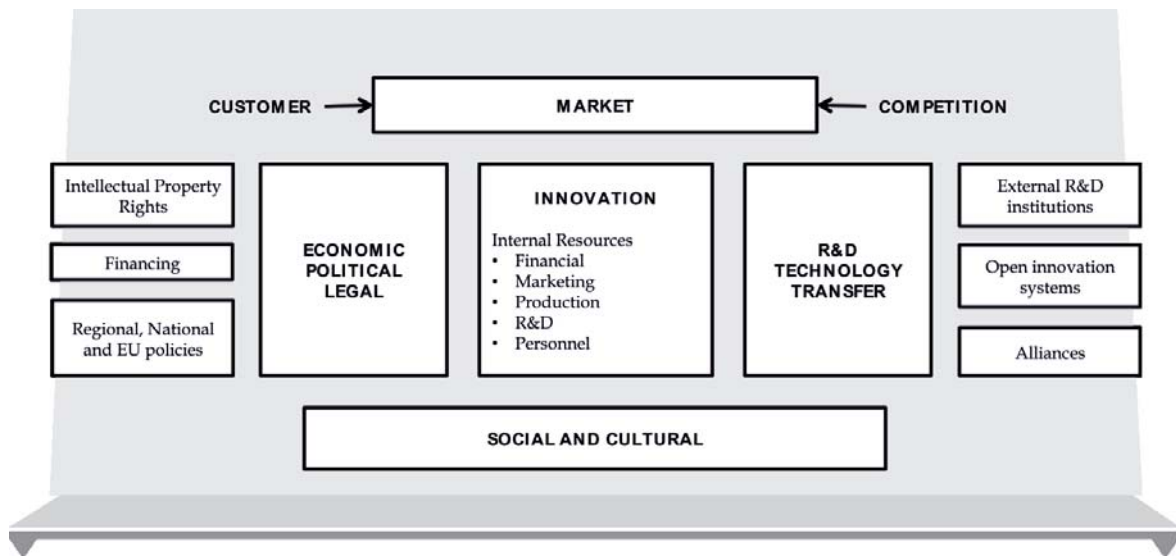
Management of innovations is also affected by a number of elements of the environment such as: social and cultural components specific for a given country (historical experiences, systems of values, culture, education), economic components, which determine developmental possibilities of the economy (financial, technical), the capability of implementation and commercialization of new solutions, technological components, which comprise trends in technology establishing new standards of production and services, forms of cooperation relations in research and production, new legal solutions and the political system, international and integrative relations (participation in international research programs, trainings, etc.).

All changes occurring in the environment have an influence on the innovative activity of an organization. The proper recognition of changes and their trends enables the organization to select suitable forms of activity in the market as well as appropriate adaptation to the conditions prevailing on a given market.

Relations of the environment with company's resources are of special importance in management of innovations. The environment identification process encompasses the separation of its factors, their selection suitably to the aim of the study and recognition of their features. Fundamental factors that stimulate or limit the possibilities of the innovation development in a company are depicted in figure 1.

Management of innovations in business requires constant analysis of changes in the environment. The entire analysis has to be customer focused, as it is the customer who determines the potential for any innovation or business venture. In the process of formulation of a strategy a fundamental problem for every company is the manner of allocation of the accessible resources of knowledge, finances and information for different, mutually competitive uses.

A predominant feature of organization development strategy is the innovativeness of activity, that is to say the creative solving of problems and the use of new technologies. Organizations are trying to react in a flexible manner to all signals from the environment to ensure a dominating position in the market in the long run. Company's activity should be characterized by developmental dynamics, in other words, by the ability to undertake risk and taking advantage



**Figure 1. Factors affecting innovation in business**

Source: own study

of chances that are created by new products, new markets, and possibilities of better satisfaction of customers' needs.

Nowadays, there is a widespread belief that the market success is due to R&D activity that is closely integrated with the general strategy of a company. Therefore, changes in the management system are oriented towards the enhancement of this relationship.

At the heart of integrated management of innovations should be the management's understanding of the fact that only these organizations can survive and should not miss the chance of development that will appropriately adapt to the environment. By affecting the final result of the economic activities this environment creates a significant element of reality, in which the organization should solve problems of managing innovations in an integrative manner. The environment encompasses the entirety of actions – political, economic, social and innovative conditions – on the possibilities of the demand and the interactions between the organization and the customer.

Policy of the state and banks is also of great importance for managing innovations, i.e. the role of the triad: state – banks – industry. In shaping the competitive advantage this role is substantial and cannot be left to the "healing" role of the market. The policy of the state, through specific laws (tax regulations, among others), shapes the company's environment, which creates opportunities for entrepreneurs but also introduces certain threats and limitations, thereby

having influence on the innovative activity of companies. So far, innovative policy is largely burdened by threats (among others, low and ever-decreasing R&D expenditures). Similarly, banks shape the investment activity climate of companies through by their policy of interest rate or availability of credits. In reality, a system is formed in which a company is one of the elements; a subsystem interrelated with other elements of this system. The structure of this system determines its arrangement.

All the entities of the integrated model should try to find a method for managing innovations that would enable them to find good solutions to the problem of innovation development. Different organizations will approach the problem of innovations in various ways - e.g. large pharmaceutical companies will concentrate their efforts on research and development and finding possibilities to patent their results.

Managing of innovations is a process oriented towards the development of an organization through new products, processes and services. Irrespective of the type of activity of an organization, the role of innovation is gaining a competitive advantage by this organization. This issue also concerns non-profit organizations such as the police, education system or health care system. Competition occurs in these spheres as well; however, here innovation is aimed at obtaining a better position in combating crime or diseases or improving the low level of education.

## 2. Managing Innovation Networks

Innovation management should be based on a model of network including three interrelated elements: subjects/entities - activities - resources.

Innovation networks concentrate on analysis of entities operating in innovative environments and responsible for promoting innovation. In the analysis of the network thus profiled, innovation is generally treated as a process of interaction between different entities and institutions. Ph. Cooke states, "such a research perspective can be referred to as research on the networks or the environment" (Cooke 1997, p. 24).

According to R. Hakansson a network is characterized a specific type of interrelated properties (Hakansson 1988):

- functional interrelations: a concrete system of relationships between the participants, activities and resources,
- structures of possibilities: the participants' influential potentials, which control the activity and resources,
- knowledge structures: activities and resources based on the experience and

- knowledge of the previous participants,
- time structures: a network is a product of experience and investment in knowledge, relationships, behaviour patterns, etc.

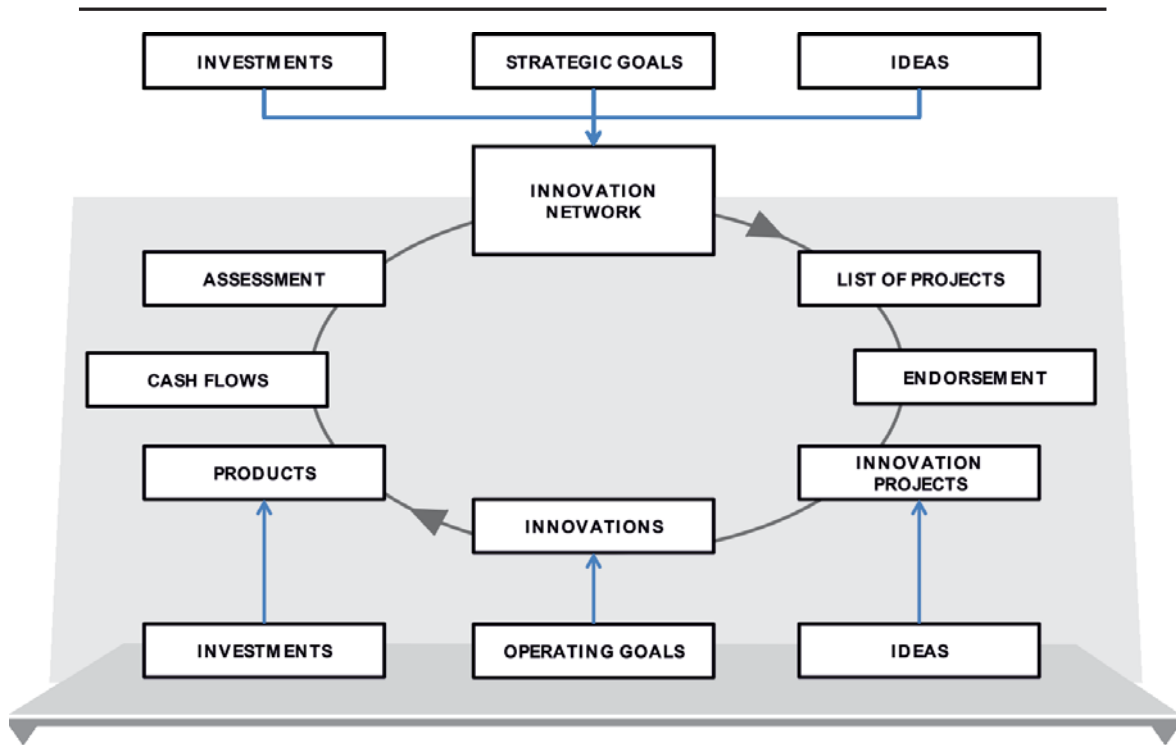
Networks are also described as systems of coordination of resources between the market and the hierarchy, in which the participants' activities are not coordinated by the price mechanism or hierarchical dependencies, but by the concrete relations of exchange within the concrete network. According to T. Peters, the greatest challenge of the 21<sup>st</sup> century will be to create the ability to manage projects beyond all conventional limits, serving the production of global products. Cooperation in a network is a form of reaction to the rapid progress and science and the increase in innovativeness. In the most advanced branches of industry in this scope, such as biotechnics, nearly every new product is the result of cooperation of a complex network of companies, each of which specializes only in narrow fragments of the design process, production and distribution, attaining in this respect the state close to perfection (Peters 1999, p. 33).

Entities appearing in the management of innovations shape a new structure and the functioning of the network. It is based on the relations: entities - activities - resources which, in managing innovations, create interrelationships determining whether the development of innovations is less or more extensive. These relationships are oriented towards innovation management and beyond the hitherto existing structures.

Resources are understood as the entirety of production layouts (personnel, capital, information, accumulated knowledge, etc.) necessary to pursue business activity and realize the strategies adopted. The conception based on resources assumes as the most important postulate that the source of competitive advantages is an advantage in resources, including information, knowledge and financial resources. Supporters of this conception refer to the value of resources as a source of advantages. The value of a resource is univocally determined by its level of rarity (uniqueness). The 21<sup>st</sup> century is the time of investments and the effective use of financial and information resources, but primarily of knowledge. The relations inherent in a region are important as they create the conditions for transferring ideas to innovative projects so that the members of a network can use them. The meaning of each of the factors is emphasised by the innovation cycle and the relation between the cause and effect creates important relations, which create innovation networks. (Enkel, Back, von Krogh 2007).

The idea that is used in the network comes from its members, which are the managers in the region. Among other sources, internal sources are mentioned as a feedback loop between marketing and sales as well as support services. It is

essential to relate to clients, competitors and other entities on the market to use innovative R&D.



**Figure 2. The cause – and – effect innovation network**

Source: own study

Innovation networks concentrate on analyses of subjects/entities operating in innovative environments and responsible for promoting innovation. In the analysis thus profiled it is innovation that is usually treated as a process of interaction between different subjects and institutions. Cooperation in a network is a form of reaction to the fast progress of science and the increase in innovativeness. In more advanced – in this respect – industry branches, such as biotechnics, nearly every new product is the result of cooperation of a complex network of companies, each of which specializes only in narrow fragments of the design, production and distribution process, reaching a state close to perfection in its specialization (Powell, Koput, Bowie, Smith-Doerr 2002).

The development of innovations proceeds in a more comprehensive fashion if companies, in their strategies, take into consideration the relations, which

comprise external sources of innovation. By going beyond the range of an individual company, they form a network of relationships between organizations – in which small and large, private and state-owned companies participate – to maximize their attitude to innovations at minimum costs.

Strategic alliances of different types (from mergers to specially organized consortia for R&D) change the traditional approach, which was based on single-handedly accomplished projects. The rationale for this type of decision is not only the economization of activity, resulting from the achievement of the desired scale effect, but also the sharing of the costs and risk of their undertakings. The investments made by the partners strengthen the permanence of their contacts. Even short-lasting research undertaken to improve a process or a product can lead to establishing technical-technological relations, ties between operational systems and other marketing and non-marketing functions, which determine the success of an organization.

The majority of the above-mentioned contacts determine whether to continue or discontinue the cooperation with a given contractor. Thus, market-oriented networks, comprising suppliers, competitors and users, are particularly important. However, special significance is attributed to networks that also comprise universities and colleges, research institutes and companies. It is assumed that “complete” networks bring much greater benefits to a single organization and the entire network (OECD 2003).

While many of these companies are poorly equipped with fixed assets, by choosing and adapting an appropriate new technology they are able to safely utilize the capital financing investments.

An essential problem of the network business management is the flow of capital, especially in the early phases of an undertaking when contacts between contractors are being established and developed. The government, establishing the rules for innovative initiatives of the state, can appreciate the importance of these relations and support future relations by ensuring the availability of capital in their early phases. These changes in the attitude to innovations in the private sector create a new role for state technology-support programs, which should become a catalyst of formation of strategic relations and alliances of the state, industry, and academic institutions for the development and application of technologies. The establishment of a relation network depends on the susceptibility to changes, the cooperation in decision making and information flow.

Innovations go beyond the R&D activity and, to a greater extent than ever before, depend on the “completeness” of a network and knowledge flow.

An organization that is not able to carry out R&D activity on its own can provide itself access to new technologies through outsourcing. The concept of outsourcing with respect to technology is nothing else but services realized by external companies. The use of outsourcing as a technological “lever” creates a possibility of introducing a new technology via contract. A strategic plan of outsourcing, which is generally related to a business strategy, should constitute the basis of a contract. A successful contract offers a chance of diminishing the risk of technology as well as the risk of selecting a technology supplier, and its implementation.

It can generally be assumed that the process in which the phenomenon of competition takes new forms is already going on. It will no longer consist in the competition between companies, or – generally speaking – economic entities, but rather between organized networks structures, in which companies established on the complementariness of resources will play the leading part.

In the contemporary economy, innovations and knowledge constitute the fundamental source of the competitive advantage and their role will be strengthening in the future. One cannot be a cheap producer of innovations without having appropriate qualifications and the ability to create new products and services, and managing complicated research, production and market processes. In the economy thus profiled companies must be managed so that there is ideal coordination between an invention, pattern designing, production, sales and logistics; the coordination that cannot be arranged by the competition.

Management in the network structure conditions is managing business rather, where there is constant search for a possibility of profitable allocation of the resources, than managing an company in the traditional sense of this word. The management of business focuses on the relations of the company with the environment and requires the capability of strategic planning, marketing, directing projects, creativity in solving problems, negotiating with partners and representing one’s own organization. These skills are much more important than the realization of the classical management functions oriented towards the company.

### **3. Managing Innovation Networks in Lodz Region**

The studies on the innovative condition of enterprises of the Łódzkie voivodeship point to the reluctance of businessmen to cooperate. The observation of formation of enterprise and network environments shows that this process is



only in the initial phase and its further development will be complicated. The elements necessary for organizing this environment have already been formed, but it is still a simple set of subjects rather than a system. The attitudes of competition occur more frequently than those of cooperation between subjects. The environment, especially all types of institutions rendering intermediary services in the sphere of innovation (incubators, centres for technology transfer, promotion and advisory/consultancy centres) play a marginal role in this process. Infrequent contacts of organizations with these institutions are only observed and their importance for the development of companies and networks is negligible. There is no flow of information, contact sites or cooperation patterns. This is a serious challenge to the innovative strategy of a region.

Two factors have contributed to the current innovative policy of the Łódzkie voivodeship. One of them was the acceptance of assumptions of the Regional Innovation/Innovative Strategy of the Łódzkie voivodeship where, within the framework of the research conducted and later analyses, areas of major importance for the further development of the voivodeship were identified. These areas became basic components of the particular priority axes for the Regional Operational Programme in the Łódzkie voivodeship for the years 2007-2013.

The other one – based on research carried out at the level of the voivodeship – was the identification of both positive and negative phenomena, the results of which, to a considerable extent, could contribute to the development of the voivodeship. The following have been listed among the definitely negative effects (Urząd Marszałkowski w Łodzi 2007):

- major share of low innovation industries and enterprises,
- modest interest of the regional R&D sphere in the commercialization of research work,
- an unsatisfactory level of development of an “information society and a society based on knowledge” in the region.

On the other hand, the positive features are as follows:

- a considerable potential of R&D,
- a large number of universities and colleges (currently: 6 state owned and 26 private higher education establishments (lodzkie.pl)),
- a high level of entrepreneurship,
- a high level of industrialization of the region,
- growing interest of external investors in the region, which can be attributed to the considerable development of the Łódź Special Economic Zone and the expansion of investment areas.

Current work on Regional Innovation Strategy (LORIS 2030) indicates that not much has changed in strengths, weaknesses and threats. The region has changed and our understanding of innovation networks and the importance of innovation have changed providing for an interesting cause to review the opportunities.

The task of any company, as far as innovation is concerned, should be aimed at strengthening its competitive position. To achieve this goal products have to provide customers with additional value. Only those products or services that can be sold will allow the competitive position of a company to be protected or strengthened. Innovations determine the competitiveness of an enterprise, i.e. its ability to remain in the market. Therefore, stating that the introduction of innovations is risky is not true; on the contrary – it is the lack of innovations that can constitute a threat to the enterprise existence.

High tech companies such as Apple or Amazon provide exemplification of success of such an approach to competition. A similar approach to creating competitive advantage spreads to other branches such as biotechnology or pharmaceuticals. It should be noted that these branches are becoming stimulators of the economic growth by involving other industries to cooperate with them.

The creation of the value of a company depends on the reaction, response and activity of the company. An enterprise based on knowledge and experience reacts to the future expectations of clients to determine desired strategic competences and their critical levels. While the company analyzes the gaps (strategic, planning, operational) to determine sources of competence and distribute responses, the analysis of the current situation and monitoring of the environment allows the company to determine the present competence and initiate a system of knowledge acquisition, i.e. to start training employees. These branches are not only characterized by innovativeness but also high profitability and turnout on the global scale. The scale economy offers a possibility of doing internal R&D but also doing research in cooperation with other units. This means that these enterprises take advantage of the possibility of sharing a high risk that accompanies the expected high rate of return on the capital invested.

Innovations based on knowledge support the competitiveness of companies and enable the latter to obtain a high rate of return on the capital. It should be noted, at the same time, that it is only those innovations generate value for the shareholders that provide a higher rate of return on innovations than the cost of the capital used for financing them.

The policy of the state and banks is also significant, i.e. of great importance is the role of the triad: state – banks and industry. In shaping the competitive

advantage of definite branches, this role is substantial and cannot be left to the "healing" role of the market. The state policy – through specific regulations (e.g. taxes) – shapes the environment of a company, which creates specified conditions for the enterprising ones, but also introduces certain threats and limitations and thus affects the innovative activity of companies. So far, the economic policy has, to a greater extent, been burdened with threats (among others: low and constantly decreasing outlays for R&D). In a similar way, banks – through their policy of interest rate or availability of credits – shape the climate of investment activity of enterprises. In reality, a system is formed in which a company is one of the elements of this system; a subsystem interrelated with other elements of the system. The structure of this system determines its arrangement.

Managing a company is a process oriented towards development of organizations through introducing new products, processes and services. Irrespective of the type of activity of a company, its task is to gain a competitive advantage.

## Summary

### **Integration processes in managing innovations**

The paper concerns integration processes aimed at business and region development. Effective cooperation should be based on networks that comprise interrelations between organizations, activities and resources. Network cooperation is based on knowledge and information, which determines the innovativeness of organizations in the region. The study is based on research conducted in Łódzkie region. The aim of this paper is to consider the role of integration processes in managing innovations in Łódzkie voivodeship during the 2007-2013 period in the context of 2030 strategy objectives.

**Key words:** *innovation, management, networks, Poland.*

## Streszczenie

### **Procesy integracyjne w zarządzaniu innowacjami w regionie**

W referacie rozważa się procesy integracyjne w zarządzaniu innowacjami, które zorientowane są na rozwój przedsiębiorstwa i regionu. Aby współpraca była efektywna, to zarządzanie innowacjami powinno bazować na modelu sieci, który obejmuje wzajemne relacje pomiędzy jednostkami organizacyjnymi,

działaniami (aktywnościami) i zasobami. Współpraca w sieci jest oparta na wykorzystaniu wiedzy i informacji, która stanowi o innowacyjności jednostek w regionie. Studium przypadku prezentuje się na przykładzie województwa łódzkiego. Celem artykułu jest rozważenie znaczenia procesów integracji w zarządzaniu innowacjami w regionie na przykładzie województwa łódzkiego w okresie 2007-2013 w kontekście celów strategii do 2030 roku.

### **Słowa**

**kluczowe:** *innowacje, zarządzanie, sieci, Polska.*

### **References**

1. Cooke Ph. (1997), *Planowanie regionalnej sieci innowacyjnej: doświadczenia regionalnej polityki innowacyjnej Unii Europejskiej w Południowej Walii*, [in:] *Polityka rozwoju regionalnego: innowacje i restrukturyzacja*, PARR, Warszawa 1997, p. 24.
2. Enkel E., Back A., von Krogh G. (2007), *Knowledge Networks for Business Growth*, Springer Berlin, Heidelberg 2007, p. 179-180.
3. Hakansson H. (1988), *Industrial Technological Development. A Network Approach*, European Commission, London 1988.
4. LORIS 2030 (2013), [http://www.biznes.lodzkie.pl/wps/wcm/connect/gospodarka/gospodarka/rsi\\_2030](http://www.biznes.lodzkie.pl/wps/wcm/connect/gospodarka/gospodarka/rsi_2030) (accessed 1.02.2013).
5. OECD (2003), *Organization for Economic Co-operation and Development. Networks of Innovation*, OECD Publishing House, Paris, pp. 34-40
6. Peters T. (1999), *Liberation Management*, Pan Books, London 1993, p. 302. Cited after: C. Sikorski, *Zachowania ludzi w organizacji*, PWN, Warszawa 1999, p. 36.
7. Powell W.W., Koput K.W., Bowie J.I., Smith-Doerr L., (2002) *The Spatial Clustering of Science and Capital: Accounting for Biotech Firm-Venture Capital Relationships*, *Regional Studies*, Vol. 36 (3), pp. 291-305.
8. Urząd Marszałkowski w Łodzi (2007), *Analiza SWOT dla województwa łódzkiego w Regionalnym Programie Operacyjnym Województwa Łódzkiego*. Urząd Marszałkowski w Łodzi, Łódź, July 2007, p. 34-35.
9. Urząd Marszałkowski w Łodzi (2013), <http://www.lodzkie.pl/wps/wcm/connect/lodzkie/departamenty/Edukacja/SzkolyWyzsze/> (accessed 1.02.2013).