

# Paweł Filipowicz

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## Historical value chain analysis as the tool of continuous regional innovation development

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Managerial Economics 3, 45-55

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2008

Artykuł został opracowany do udostępnienia w internecie przez Muzeum Historii Polski w ramach prac podejmowanych na rzecz zapewnienia otwartego, powszechnego i trwałego dostępu do polskiego dorobku naukowego i kulturalnego. Artykuł jest umieszczony w kolekcji cyfrowej [bazhum.muzhp.pl](http://bazhum.muzhp.pl), gromadzącej zawartość polskich czasopism humanistycznych i społecznych.

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Paweł Filipowicz\*

# **Historical Value Chain Analysis as the Tool of Continuous Regional Innovation Development**

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## **1. Introduction**

Knowledge creation and innovation are driving forces of economic growth, social development and job creation in modern economy. Knowledge has become the most important source of development and international competitiveness. Knowledge based industry is now crucial development factor of regional growth and territorial innovation also in Central Europe. In territory based innovation systems, firms, organizations, and the government interact with one another and become actors in the cycles of knowledge conversion and innovation. Regions, networks, and the knowledge-based economy are interrelated in territory based innovation systems. However, regional innovation systems in recent years have become increasingly important for European regional development with the increasing role of local authorities and the local environment under the globalization of economic processes, here is still the question about the nature and source of region development strategy. This is very specific problem of Central Europe pro-innovation process.

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\* Akademia Górniczo-Hutnicza w Krakowie, Wydział Zarządzania, Katedra Zarządzania i Inżynierii Systemów.

## **2. Territorial Innovation Systems – European overview**

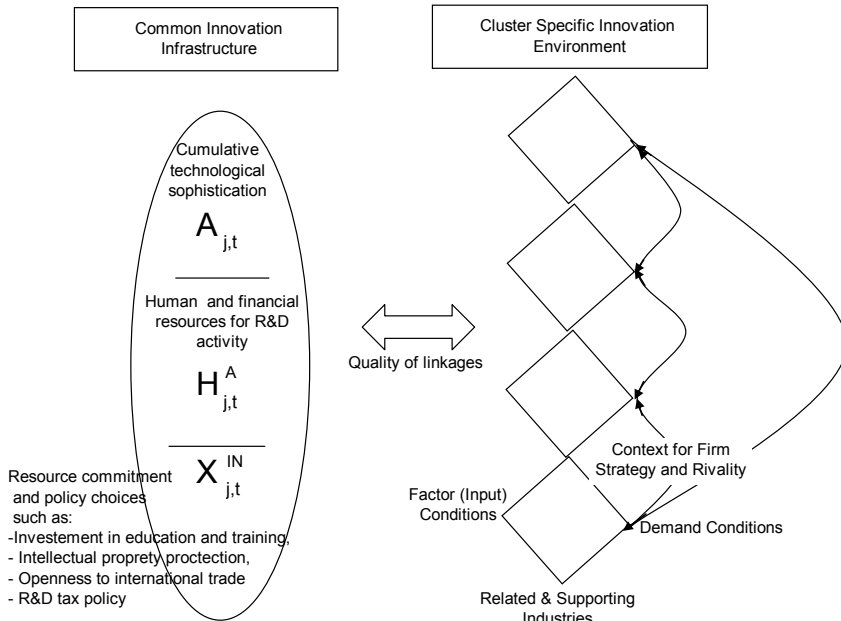
Characteristic for a systems approach to innovation is the acknowledgement that innovations are carried out through a network of various agents acting in an institutional framework. Innovation systems are categorized in different ways, using territorial or sectoral delimitations. Most popular way of using the innovation system approach is at the national level. Using territorial boundaries is justified by the common culture, language and legislation within national boundaries and influencing innovation activity. Another possibility is to use the geographical boundaries of regions. A third way the innovation system approach is used refers to sectoral delimitation [1]. National innovation systems approach highlights the importance of interactive learning and the role of nation-based institutions in ex-planning the difference in innovation performance and in the economic growth across various countries. Sustainable innovation systems develop their special profiles and strengths slowly in the course of decades. The historical development and present shape of a national system of innovation reflect the character of the related political system: centralist nations like France established an innovation system focusing on its centrally constituted political system. By contrast, the innovation systems of federally constituted nations like Germany or the United States, are rooted in strong regional infrastructures, institutions and related governance mechanisms. This kind of heterogeneity is a framework condition for the European integration of innovation systems that cannot be underestimated [3]. In this European innovation creation process appears the must of taking under the consideration the way of its development in Central Europe. Also rationale of having territorially based innovation systems – national and regional – as the consequence of historical technological but also political trajectories based on knowledge and localized learning was proved in 90's with the western experience. This conception of linking the territorial innovation systems with the local economic development history is much better promoting systemic relationships between the production structure and knowledge infrastructure in the form of national and – which is more interesting for Central Europe – regional innovation systems. The formation of regional innovation systems must be understood in this context of creating a policy framework aiming at a systemic promotion of localized learning processes in order to secure the innovativeness and competitive advantage of regional economies [2]. This approach is linked to conception of the region as an entity which hosts a large part of an economic value chain and has a governance structure of its own, independent from its environment. Now day's vision of the inter-relationship between emerging

transnational – EC political and administration institutions and the actual policy development within national innovation systems must be based on regional net of innovation [4]. For the last two decades nation states increasingly tended to compete with each other in the field of innovation policy, now there is the moment of creating United European innovation environment based on regional net. Such developments make the questions about the perspective of European Innovation System development and also - about Central Europe innovation systems reconstruction.

### **3. Value creation and national innovative capacity**

National innovative capacity is a country's potential – as both a political and economic entity – to produce commercially relevant innovations. This capacity is not simply the realized level of innovation but also reflects the fundamental conditions, investments, and policy choices that create the environment for innovation in a particular location or nation. National innovative capacity depends in part on the technological sophistication and the size of the scientific and technical labor force in a given economy, and it also reflects the array of investments and policy choices of the government and private sector that affect the incentives for and the productivity of a country's research and development activities [6]. National innovative capacity is also distinct from both the purely scientific or technical achievements of an economy, which do not necessarily involve the economic application of new technology. The national innovative capacity framework aims to identify the factors enabling a region to innovate at the global frontier. Although the framework was created for application at the national level, it can also be employed to evaluate innovative capacity at the regional or local level – cluster. National innovative capacity depends on three broad elements that capture how location shapes the ability of companies in a particular location to innovate at the global frontier (fig. 1).

Although the common innovation infrastructure sets the basic conditions for innovation, it is companies that introduce and commercialize innovations. Innovation and the commercialization of new technologies take place disproportionately in clusters – geographic concentrations of interconnected companies and institutions in a particular field. In a M.E. Porter's diamond model the “competitive advantage” is determined by four attributes of the national or also regional location: demand conditions, competition, factor conditions and connections (fig. 2). Connections could be formal and informal contacts between industries, individuals and authorities. The argument is that the more connections that exists, and the more diverse they are, and the more actors that are a part of the connections, the more is the knowledge diffused. The con-

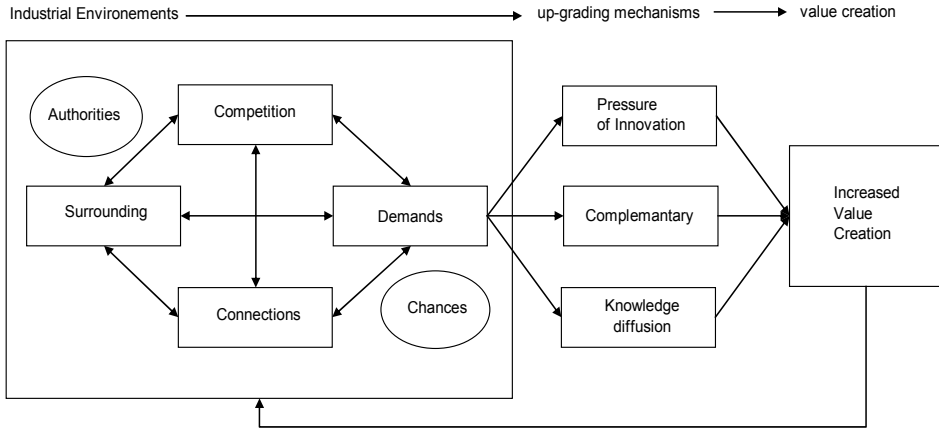


**Figure 1.** Elements of national innovative capacity

Source: [7, 906].

nections can be of different nature: vertical and horizontal connections. Presence within a cluster offers potential advantages to firms in perceiving both the need and the opportunity for innovation. Companies within a cluster can often more rapidly source the new machinery, services, components, and other elements to implement innovations. Local suppliers and partners can and do get involved in the innovation process – the complementary relationships involved in innovating are more easily achieved among local participants. Reinforcing these advantages of clusters for innovation is the competitive and customer pressure and constant comparison within a concentrated group of firms in the same zone. The global competitiveness of a cluster depends importantly on its innovation orientation. A regional innovation system can be conceptualized as regional clusters surrounded by supporting knowledge organizations. Regions are seen as important bases of economic coordination and governance.

M.E. Porter's (model) of competitiveness renewed interest in clusters and has been adopted by several regional and national governments and international organisms to foster competitiveness. M.E. Porter proposes a framework to analyze firm productivity and regional or national competitiveness where location is a main source of competitive advantage within a context of a glob-



**Figure 2.** Porter’s diamond with enhancement factors  
 Source: [5, 391].

al economy. The regional innovation system approach does not only exist as a framework for studying economic and innovative performance but it is also in use as a concrete tool for policymakers to systemically enhance localized learning processes. D. Doloreux and S. Partob [10] affirm that the innovation occurs more easily in situations of geographic concentration and proximity, which means regional clusters play a crucial role in such processes. A regional cluster is defined as a group of firms in the same industry, or in closely related industries that are in close geographical proximity to each – industrial zones. Clusters can include governmental and educational institutions and support services, with cluster boundaries defined by linkages and complementarities across institutions and industries. Clusters have in common specialization, proximity and cooperation that lead to spillovers and synergies within a regional innovation system. The more successful innovative firms possess the ability to connect with and act in different systems of innovation as a source of competitive advantage. Being the part of wide networks provides a variety of knowledge sources that not only generates inputs for firms but also sustains their economic activity. And that is also the way that the knowledge is transferred from the global to regional environment. This kind of approach seems to be confirmed by H.O. Rocha [13]. First, the focus is on both the success of the community of firms and the individual small firms efficiency. Second, the success of the industrial districts lies not only on economic factors but also and mainly on historical and territorial specific socio-cultural ones. The need for inter-firm collaboration and trust gives rise to the tendency for spatial agglomeration. M. Fromhold-Eisebith and G. Eisebith [14] suggest a categorization of cluster based on the type of promotion institutional mode. In fact, they focus on different ways to

initiate, organize and govern cluster promotion which significantly affects rules of interaction, norms, routines and cultures of collaboration and collective learning, in short, major qualities of innovative clusters. Institutional differences in particular relate to different kinds of actors leading a cluster initiative which entails other distinctions in cluster procedures. In this regard, the public–private dichotomy plays a major role. The proposed approach differentiates between top-down and bottom-up institutionalizations of cluster promotion. The top-down category comprises all public initiatives and policy schemes that deliberately foster clustering, at least temporarily financed or co financed by public funds and directed by publicly dominated agencies. Most cases taken up in recent research on cluster promotion belong to that type, either emerging from national policy frameworks, like in The Netherlands, Sweden and the UK, or from regional ones, like in Austria, Belgium, Germany or Spain. The second category encompasses coordinated initiatives that are primarily created, funded and governed bottom-up by private actors, mostly companies, as the actual agents of cluster dynamics. This highlights that cluster promotion is not limited to the policy sphere, but may also take institutional shapes emanating from the willingness and capability of self organization of clusters. Although neglected by research, bottom-up cluster promotion is not insignificant. Cluster promotion, due to its systemic, participative nature, generally requires and implies greater involvement of private industrial actors in activating, designing and implementing public efforts although firms rarely substantially fund official cluster programs. Private industrial initiatives are hardly implemented without some encouragement, small participation or, benevolent acceptance by public actors. Even when clusters evolve without any direct public intervention, indirect effects of the wider national or regional policy framework play a role concerning, for instance, infrastructure or sector oriented support. This polarization concept can be seen as the classical ‘state versus market’ approach in setting government - against industry - driven actions. Using this kind of systematization it is important to underline that in Eastern and Central Europe countries bottom-up cluster promotion is rare. The main reason is the lack of economic system continuity and – paradoxally – EC help programs which privileged the top-down cluster promotion logics.

#### **4. Regional innovation policy and industrial policy – need of historical development context analysis?**

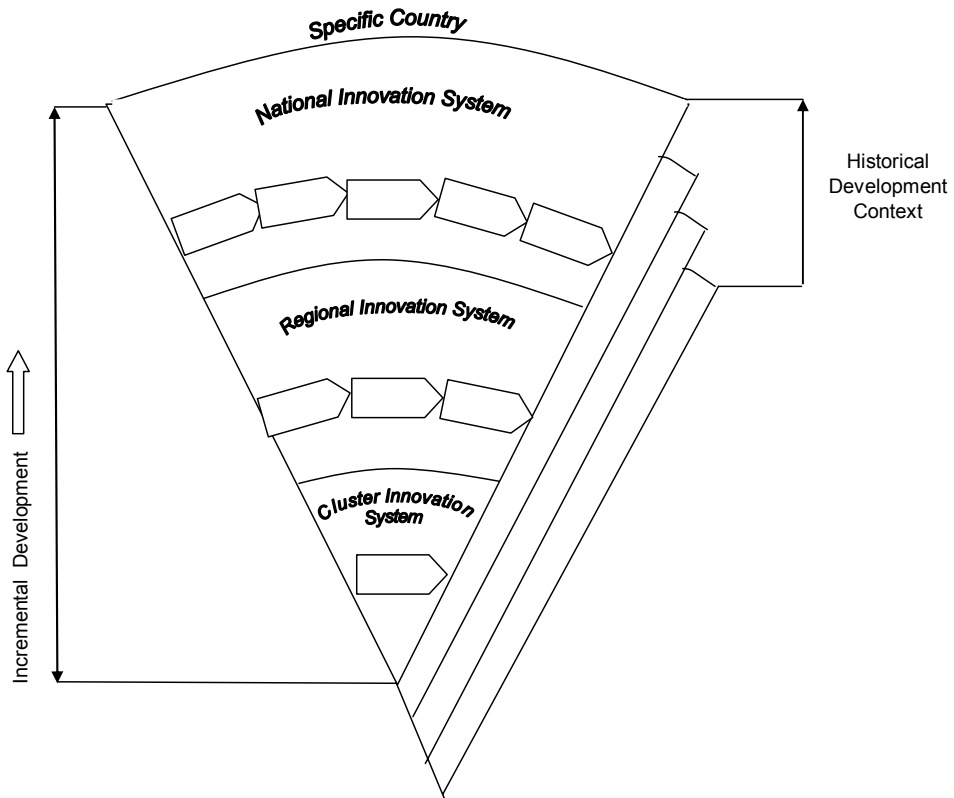
The regional dimension is important because many of the factors that are known to influence innovative capability at the national level have strong regional dimensions. The regional authorities can play a major role in forming of the re-

gional innovation system, understood as the process of generating, diffusing and exploiting knowledge in a given territory with the objective of regional development progress. The regional system is itself subject to the process of learning, and becoming an efficient “learning region”. The nature of the regional governance system and the wider institutional framework forms the effectiveness and the efficiency of regional knowledge building. The complementary relationship between government, education and business R&D indicates that the interrelations between different actors and different parts of the system and the institutional framework shall provide synergy or if there is some discontinuity – its lack. For C. Oughton, M. Landabaso, K. Morgan [8] the main cause of the regional innovation paradox associated with regional synergy absence is not primarily the availability of public funds in lagging regions. Its explanation is linked with the nature of the regional innovation system and the institutional characteristics of these regions.

Firms in lagging regions do not demand for R&D and other innovation inputs and tend to lack a tradition of cooperation and trust both amongst themselves or with regional innovation actors, such as universities. The regional innovation system is fragmented and lacks co-operation mechanisms for the supply of innovation inputs to match firms demand, or the appropriate conditions for the exploitation of synergies and cooperation among regional innovation agents which could eventually fill gaps. Given low levels of investment in innovation inputs and the complementarities between private and public expenditure on innovation activities such as R&D, absorption of public funds designed for R&D and innovation activity will also be low. As a result regions frequently get trapped in a vicious circle of little private sector demand and poor public funding supply which is difficult to break out of from within the system. This kind of situation exists often in Central Europe. In this case, resolving the problem is not only the question of regional organization change but also the need of local value chain reconstruction (fig. 3).

The main idea of solution is – first the creation – and then the alignment process of national and regional innovation systems. Comparing to the West Europe, the biggest part of eastern countries are still under market transition process and their actual innovation orientation is in some way, the result of international existing trends. In fact there is not – like in West, any historical context of innovation systems. At national innovation level, in majority they have not supported, for political reasons, market oriented innovation tradition development. As most of them had a centralized economy and there was the same bad situation on the regional level. For S. Radosevic [9] these conclusions suggest that in Eastern and Central Europe regional innovation systems are emerging in capitals or areas with a diversified economic structure. Mono-structural regions and those with a high share of industry are unlikely to grow and develop their technology-based activities. A relatively short history of post-socialist transformation already shows that some localities and regions with initially unfavorable conditions have

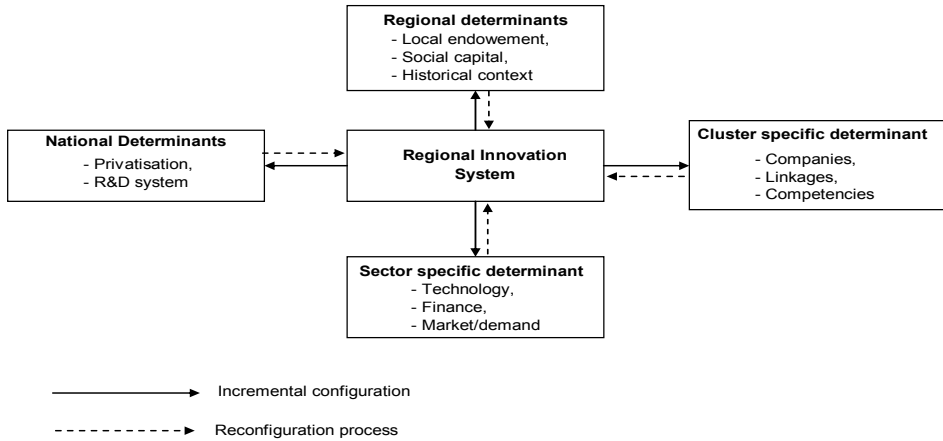




**Figure 3.** Territorial cluster value creation net

been able to recover and grow faster than those with seemingly more favorable preconditions. Today to become more competitive those decentralized economies are undertaking the politics of regional differentiation based on the western experiences (fig. 4).

This action must be reinforced by using before centralization historic context of innovation development. The presented conception of cluster innovation development process is the exact way of reaching the integrality of regional innovation. In the consequence there is the need of re-actualization the determinants of regional systems of innovation in Central and Eastern Europe. They emerge as a result of mutual interaction between national, micro, sectoral and region-specific determinants. The relative significance of each determinant varies in each case. In a learning economy innovation is basically understood as an interactive learning process, which is socially and territorially embedded and culturally and



**Figure 4.** Completed determinants of regional systems of innovation  
 Source: Based on [9, 88].

institutionally contextualized. This view on innovation means an extension of the range of branches, firm sizes and regions that can be viewed as innovative, also to include traditional, non R&D-intensive branches, small firms and peripheral regions. An important implication of this view is that the distinction between high-tech and low-tech branches and sectors is not relevant. And it maintains that all branches and sectors can be innovative in this broader sense. When emphasizing that the creation and reproduction of competitive advantage requires continual learning and innovation, productive and innovative firms enjoying competitive advantages on the global markets can be found in all branches and sectors. An important implication of this broad perspective on innovation is also to reestablish the focus on the enormous untapped growth potential that could be mobilized in traditional sectors, if the necessary institutional reforms and organizational change that promote learning processes.

## 5. Conclusion

A regional innovation system is a normative and descriptive approach that aims to capture how technological development takes place within a territory. The approach has been widely adopted to underline the importance of regions as modes of economic and technological organization, and it fits to the actual stage of innovation system development in Central Europe. The diverse variety of European regional innovation system types can be systematized with top-down and bottom-up cluster promotion institutionalizations. While the common in-

novation infrastructure sets the general context for innovation in an economy, it is ultimately firms, influenced by their microeconomic environment, that develop and commercialize innovation. That why the bottom-up appears actually to be the best way of innovation development support tool, particularly in case of differentiation lack in eastern economies. This approach based on cluster activities is also interesting perspective on reaching the EC competition position during the period of globalization Innovation clusters may also form the geographic net, which will impact the integration of European economy.

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