

*Innovation in Regional Clusters –
Theoretical Foundations and
Success Criteria*

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1. Cluster Definition

A cluster is ...

“... a geographically proximate group of interconnected firms and associated institutions in related industries” (Porter 1998)

1. Cluster Definition

Constitutive Elements

- Geographical proximity
- Sectoral (or technological) proximity (“related industries”)
- Interconnectedness (cooperation and competition)
- Associated institutions (more than just firms)

Additional element of an Innovation Cluster:

- Strong research base

Expected impact

“clusters are ... drivers of national innovation systems”
(OECD 2001)

“innovative clusters form the regional basis of
national competitiveness”
(Council on Competitiveness 2005)

Expected impact

At the centre of scientific and political interest are sectors which are expected to be engines of growth in the knowledge-based economy, such as information technology, biotechnology, environmental technology and multimedia.

Expected impact

It is claimed that clusters have the potential to affect competition (and regional or national competitiveness) in three ways:

- By increasing the productivity of the (existing) firms in the cluster
- By stimulating new firm formation
- By driving innovation

2. Clusters and Economic Theory

2. Why clusters might boost innovation – theoretical arguments

California Dreamin': The feeble case for cluster policies (by Gilles Duranton)

Essence: The case for cluster policy is theoretically ambiguous and empirically rather weak

2. Why clusters might boost innovation – theoretical arguments

Competitiveness can be boosted by the development of knowledge as a *strategic resource* (Temple 1998).

2. Why clusters might boost innovation – theoretical arguments

Clusters, with their high density of information flows, their social capital and their access to intellectual, technical and social spillovers provide a particularly fertile soil for the growth of the strategic resource knowledge.

2. Why clusters might boost innovation – theoretical arguments

Clusters provide a specific form of market organization that helps firms to become more knowledgeable and to compensate for demand and supply fluctuations, in particular when industry conditions are characterized by high uncertainty or ambiguity (Maskell and Lorenzen 2004).

2. Why clusters might boost innovation – theoretical arguments

In the globalized economy firms and locations face an increasing pressure to compete on innovation rather than on productivity alone. Clusters are important in this respect, since

- they allow firms to be more innovative and productive) than they could be in isolation
- they reduce entry barriers for technology-based start-ups
- they help innovative SME's to compensate the limits of their size

2. Why clusters might boost innovation – theoretical arguments

Of particular importance is that functioning clusters provide a high density of information flows, not simply vertically between consumers and suppliers but also horizontally between firms in the same industry and across industries.

2. Why clusters might boost innovation – theoretical arguments

Young and small firms, especially in knowledge-intensive sectors, depend heavily on shared knowledge and social capital, i.e. “ ... they benefit from intellectual, technological and social ‘spillovers’ based on network interactions with other entrepreneurs, other scientists, financiers and people in the same business and with comparable mindsets to themselves.”

(Cooke 2001)

3. Why clusters might be dangerous

- “Too many regions try to become Silicon Valley without even a glimmer of hope of doing so” (M. Storper)
- Possible discrimination of innovative firms which are not in the focus of the cluster
- Communication and cooperation between local actors may become so intense that their ability to perceive changes outside the cluster suffers
- Old clusters have the motivation and the means of keeping old industries alive rather than promoting and shaping structural change

4. Empirical Evidence

- Ciccone and Hall (1996)
- Feldman and Audretsch (1996, 1999)
- Baptista (2000)
- Moreno et al. (2005)
- Audretsch and Dohse (2007)

Interim Result

Clusters can boost innovation and growth of regional economies, but they do not necessarily work in this direction. The success of innovation clusters depends on a number of critical factors.

5. Success factors for the development of innovative clusters

1. A strong science base
2. A large enough and dynamic company base
3. Entrepreneurial culture
4. Availability of finance
5. A skilled labour force

5. Success factors for the development of innovative clusters

6. A well-maintained social and physical infrastructure
7. Business support services and large companies in related industries
8. Effective networks
9. Openness to the outside world
10. Supportive policy environment

6. Can clusters be built?

Clusters cannot be created from scratch. They must be business driven!

Not all places are suited to become a technology cluster. A critical mass of competences is an indispensable precondition for cluster-building.

Industry life cycle and knowledge intensity play a key role.

Competition within the cluster is as important as cooperation.

The focus of the cluster should not be defined too narrowly.

Openness to the outside world and openness to change are of pivotal importance.

Cluster development takes time.

7. What role for the public sector?

The government (especially local government) has to take an active interest in the fate of the private sector.

Review regulations, remove regulations that are not essential, and efficiently (re)-organize what remains as the most important tasks for government.

Figure out what kind of market-failure(s) (if any) the cluster faces and develop appropriate means to overcome these failures.

Act as moderators, mediators and facilitators of cooperation and help overcoming distrust among firms.

Help the cluster to establish an international reputation (cluster branding), keep the cluster open for the inflow of ideas from outside and help to connect the cluster with the outside world.

Thank you for your attention!