Agglomeration mechanisms in biotech clusters: insights from the French experience

ERIC JOLIVET
UNIVERSITY OF TOULOUSE I CAPITOLE
MANAGEMENT RESEARCH CENTER (CRM) - CNRS
The nature of competition has radically changed in recent times (Porter 1998a).

Size, factor endowments, barriers to entry have become less efficient as competitive forces than they used to be (Porter 1998b).

As a result, the traditional advantages based on stand alone large firms is eroded (Florida 2002).

Equallly, previously successful regions and nations are facing difficulties adapting to this new context (Florida 2002).
Clusters are the novel ‘ecosystems’ of competition (Porter 1998a)

efficient organizational arrangements to compete in a globalized and knowledge based world (Porter 1998b).

cornerstone of competitiveness for regions and nations (Porter 2003)
Biotech (and ICT) have become emblems of this emerging economy

Many initiatives and investments to structure bio-clusters around the world.

Some successful, some less successful...
QUESTION: WHAT MAKES THE DIFFERENCE BETWEEN SUCCESSFUL AND UNSUCCESSFUL BIO-CLUSTERS?
What did we learn?

LR finding I – Clusters are organizations efficient at learning and innovating

- When successful, bioclusters develop outstanding capacity to collectively learn and innovate (Saxenian 1994, Talman 2004)

- This ability comes from creating, accumulating and circulating specialized and tacit knowledge, platforms/standards and specific assets between members (Maskell 2001, Porter 2000)

- This collective learning process requires participants to share proximity/location. knowledge and specific assets circulated are ‘sticky’ ie mainly available to this restricted area and members (Von Hippel 1994, Feldman et al 1999)
One of the key problems associated with clusters is that gathering resources in one place is a necessary but not a sufficient condition to get this efficient collective dynamics.
LR finding II – Two necessary conditions for collective innovation to happen

• One key factor is the attractivity towards high quality factors, notably human capital - ‘geographic charisma’ (Appold 2005).

• Another one is the establishment of ‘synergies’ between clusters members based on the generation of ‘external economies’ within the cluster (Porter 1998a).
What did we learned

More precisely, in successful clusters:

- Synergies have been shown to depend on the establishment of a **cohesive socio-cognitive dynamics** (trust, shared views, norms and values, communities of practice and knowledge) (Saxenian 1994, Dibaggio et al 2003, Rowley et al. 2000, Nielsen 2005, Cowan et al 2007 2009, Bell et al. 2009)
What did we learn

- More precisely, in successful clusters:

- Long term sustainability and performance has been shown to depend on the formation of hybrid collectives, networks of communities covering different areas of expertise and different stages of the innovation process that would be flexibly called upon on a project base (Arora et al. 2001, Saxenian 2006, DallaPria et Vicente 2006, Sydow et al. 2009).
How to characterize clusters success (taking dynamics into consideration)
Proposal grid of analysis

Two major factors are to be considered:

1) quality and complementarity of resources and competences
2) virtuous social and cooperative dynamic
Perspective from some French cases
French main bioclusters

Alsace biovalley
Medicen Paris Region
Evry Genopole
Nantes Atlanpole
Cancer Bio-Santé (TLS)
Orpheme (Marseille)
Evry genopole

BASED ON INVESTIGATIONS MADE BY
JOLIVET 1998
LANCIANO-MORANDAT, JOLIVET, NOHARA
2010
Quality and complementarity of resources and competences

Management style: Headquarter type of organization with planning and well defined activities

Very high selectivity mechanism based on ‘experts views’

Effort to build quality label and attract star scientists and venture capital

Effort to build complementary competences around clear scientific & technological domain (Public labs, drug discovery start ups, diagnostic start ups, technological platforms)
Virtuous social and cooperative dynamic

- ‘happy few’ style / cohesive commando with clear rules of the game and head

- Cluster administration with overall vision and stable framework (good network at the State and public research institutions)

- Complementarity and collaborations along the value chain has been organized (mainly early exploration phases)
summary

Evry is a commando style cluster with a very strong governance, restrictive rules and selectivity.

It is built on a planned, consistent vision held by cluster head, with strong but channelled social interactions.

Efficient vehicle built for early phases explorations of genomic applications.

Entrepreneurs had limited initiative to grow their own culture, norms and vision.

Strong planning limits unexpected creativity and adaptation to rapid change.

Techno-push vision and limited downstream (pharma and practitionneers) connection.
Based on investigations made by Munisi, Sengoku, Le Thi, Jolivet 2012
Quality and complementarity of resources and competences

Management style: intermediation between pharma/universities and entrepreneurs

From a selectivity based on a shared therapeutic niche (infectious disease) to gradual enlargement

Effort to build new complementary building blocks and explore novel therapeutic approaches for human and animal vaccine industry
Virtuous social and cooperative dynamic

- Cluster administration with overall vision and stable framework (local and regional authorities and large pharma)

- Effort to aggregate existing networks and communities in a more focused way (large pharma, entrepreneurs networks, technological platforms, research labs, students, training, local authorities)

- Effort to enhance their collective learning and innovating capacity around industrialised innovation processes.
LyonBiopole is an intermediation style cluster acting as a mediating governance structure with an industrial purpose.

It benefits of a consistent vision based on industrial and innovative objectives led by large pharma around long established competences.

This strategic vision leads to the selection and attraction of complementary resources (especially research labs) to enhance the capacity of innovation and exploration of novel therapies in the infectious disease field of large industrial companies.

It is an effort to capitalize on long existing social and professional networks and communities and bring them to cooperate around innovative and entrepreneurial projects.

This model seems to work mainly as a local eco-system and one question regards its links with more international and venture capital communities.
Preliminary conclusion
Variety and ambiguity

- The purpose of this work was to try to capitalize on 15 years of research on clusters to identify important conditions in building successful clusters.

- France has a handful of bioclusters experience. The study of two of them shows that success depends on two major aspects:
  - quality and complementarity of resources and competences attracted (in and out)
  - ability to establish social and cooperative dynamics based on trust and shared orientations.
Variety and ambiguity

- Two cases show two different routes to build quality and complementary assets and create socio-cognitive dynamics conductive to innovation and creativity.

- They also indicate that each cluster is a unique sort of organization. Like other organizations they exhibit robust constructions but also areas of weakness and fragility.
References
Références

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