

Title:

“Open innovation strategies and industrial knowledge bases - one size fits all?”

A draft version by

Heidi Wiig Aslesen (BI-Norwegian school of management/NIFU-STEP)

Knut Onsager (NIBR)



The CKI-project : "City-regions, knowlegde-bases and innovation support systems" (RCN: 2006-2009)

Heidi Wiig Aslesen (BI/NIFU-Step), Knut Onsager (NIBR),
Arne Isaksen (HiA) and Ove Langeland (NIBR)

- **Main objective:**

- increase the knowledge about different ***city-regions' advantages, innovation capabilities and roles*** in the knowledge economy – special focus on the development of knowledge-intensive-industries.

- **Sub-goals:**

- ***develop concepts and framework*** for analysing city-regions advantages, capabilities and roles
- ***increase the empirical knowledge*** about city-regions in Norway
- ***discuss relevant policy*** for different city-regions.

- **Research design:**

- ***Developing concepts and framework*** (2006-....)
- ***Extensive analysis*** of statistics (2006-2007)
- ***Intensive analysis*** of cases based on survey and interviews (2008-₂2009)

Starting point:

- Work on 'open innovation' has not yet empirically examined how open innovation strategies is affected by industries knowledge bases (starting point large scale firms and sourcing strategies)
- The approach underlie the point that innovation is more than R&D and that the knowledge creation process and the external interplay (open innovation strategy) will evolve differently, suggesting that several open innovation strategies can lead to innovation and competitiveness.
- The analysis goes beyond external knowledge *sourcing* as an open innovation strategy to include firms' search and innovation collaboration and to include also other channels of external knowledge – and includes the geography of open innovation strategies used by industrial knowledge bases.
- This paper is based on an analysis on a large-scale dataset with 1300 responses from knowledge intensive firms (OECD 2001) in all size categories in Norway

Main research questions:

- 1) Do open innovation strategies vary according to industrial knowledge bases (the who and how)?
- 2) Do open innovation strategies used by industrial knowledge bases have different geographical architecture (the where and how)?
- 3) Do the open innovation strategies used by industrial knowledge bases' affect innovation output?

Theoretical framing

- ***Knowledge bases, innovation modes...***
 - The knowledge base is the economic knowledge that is the specific and vital input in an innovation process
 - Unnecessary to classify some types of knowledge as more advanced, complex and sophisticated than other and thus more important for innovation and competitiveness in firms
 - Different industrial knowledge bases are assumed to have specific types of innovation logics, innovation processes, dominating knowledge flows and interaction, and finally innovation outcome – their *innovation mode* will differ...

Continued...

- ***Open innovation strategies***
 - Firms are increasingly relying on external sources of innovation by allowing ideas, knowledge and people, technology in and out of the firms (Chesbrough, 2003)
 - Even the most capable knowledge intensive companies must identify, connect to and leverage knowledge produced outside their organizational borders as a core process of innovation (Chesbrough 2006, p.2).
 - Research idea: The knowledge base determines what type of external search firms/industries engage in (open innovation strategies) – as the KB forms principally different innovation logics and are dependent on different innovation capabilities

Continued....

- **The geographical architecture of industrial knowledge bases openness**
 - Globalized firms tend to perform better, they tend to be more innovative in adjusting their organisational structure and communication channels and dealing with market dynamism and turbulence
 - Combining external codified (explicit) knowledge through actors who try to tap into outside knowledge *and* local tacit contextual knowledge enhance local learning
 - Knowledge bases that are more dependent on tacit forms of knowledge, would be more spatially bound in their learning and innovation processes than industries based on knowledge bases of a more codified nature

Analytical framework; from KB - to innovation modes and differentiated RIS

Theme	Analytically based industries	Synthetic industries	Symbolic industries
Knowledge specificities and modes of innovation	Scientific codified knowledge given through patents or other forms of documentation from the academic world. Dominated by “Know-what” and “Know-why”	Especially non-codified knowledge where much is linked to craft and traditional engineering based knowledge. Dominated by “Know-how” and “Know-who”. “Learning-by doing, using and interacting” is important.	Non-codified knowledge and practical experienced based knowledge with some kind of aesthetic and artistic form of expression is important. Dominated by “Know-how” and “Know-who”. “Learning-by doing, using and interacting” is important.
Openness of the innovation process - who and how	Knowledge comes into the industry through formal relations linked to R&D and other technical	Much of the knowledge that comes into the industry is embodied in person and machinery.	Learning through projects consisting of different occupations, knowledge also happens through projects.
The geography of openness - the where	and to a on tations	Local	Local degree
Innovation outcomes	Disruptive tions, licenses	Increase process specific	’One

Narrow
RIS; R&D
functions
top-down
of
science
and tech
policy

Broad
RIS
A wider
setting of
organisations
affecting
learning
and
innov

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Findings; empirical validity of the KB approach in that ...

Industrial knowledge base differs with regard to;

- Internal knowledge formation: All industrial KB have R&D activity but intensity of this activity differ (analytical and synthetic services high, symbolic and synth manufacturing low)
- Organisation of that activity differ (in own R&D units in analytical firm vs other ways of organising developmental activity in other industrial knowledge base)
- Open innovation strategy varies according to the nature of the industrial knowledge base
- Industrial knowledge base differ in how they combine internal and external knowledge

Innovation output

- KB approach shows that there are many ways to be innovative... since industrial KB scores on innovation indicators
- But type of output differs
 - Analytical firms most innovative (high scores on many of the indicators)?
 - New firm formation highest among synthetic services (KIBS) and symbolic industries
 - Different industrial process among the different KB (Creative destruction/creative accumulation)?

Open innovation strategies – who?

- Formal innovation collaboration is mostly carried out with actors along the value chain (customers and suppliers)
- Analytical firms have a much 'broader' set of formal innovation partners (both horizontal and vertical linkages)
- Symbolic firms the most 'narrow' (mostly along the value chain)
- Supports the initial thoughts on the modes of innovation in the different KB's

The geographical architecture where?

- 1/3rd of the firms find their innovation partners 'locally'
- Industrial knowledge base differ in their 'reach' of partners
 - A larger share of analytical and synthetic service firms collaborate with actors from 'abroad'
 - Synthetic manufacturing emphasise to a larger degree actors in Norway
 - The symbolic firms (creative industries) are particularly local
- This supports to some extent the codified/tacit dimensions of the KB approach (what about synthetic services?)

The geographical architecture how?

- Analytical firms use a broad set of channels to access innovation relevant knowledge from *abroad*;
 - Challenges the local/buzz – global/ pipeline in that both buzz and pipeline relations (informal and formal) are found in vertical and horizontal relations across space–interdependence?
- Synthetic manufacturing and symbolic industries have relatively few channels that extend outside Norway; fewer buzz/pipeline relations cross space
 - Explained by the nature of knowledge?

What explains different open innovation strategies?

- Open innovation strategies can be explained by Industrial knowledge bases – however a more nuanced approach should be tested
- Open innovation strategies can possibly also be explained by firms' ability to utilize/absorb external knowledge and to internalise it - are there reasons to believe that this differs according to knowledge base?
- Necessary to have well functioning 'closed innovation systems' (accumulate core knowledge) internally in order to link up to, use and have 'effect' of external knowledge
- Is absorptive capacity understood as level of internal R&D that explains the broad set of partners (and high innovation output) or is it the possibility to codify analytical knowledge?¹⁴