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The Identification of Cluster Growth Factors Based on an Analysis of the Literature

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National Research
Council Canada

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The Identification of Cluster Growth Factors Based on an Analysis of the Literature – Overview of Presentation

Overview of Presentation

- Context of the Analysis
- Methodology
- Findings - Description of Cluster Growth Factors
- Utilization of Results
- Implications for Future Evaluations
- Conclusion

The Identification of Cluster Growth Factors Based on an Analysis of the Literature – Context of the Analysis

Context of the Analysis

■ Evaluation Problem

- Defining success
- Comparing eleven significantly different clusters

■ Methodology

- Literature review

■ Question

- What are the most prevalent factors that affect the growth of technology and science-based clusters?

■ Objective

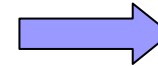
- Identify and define the most prevalent factors found in the literature
- Assess the status of each factor for the eleven funded NRC cluster initiatives

The Identification of Cluster Growth Factors Based on an Analysis of the Literature - Methodology

Methodology – Identification of documents

- The following sources were consulted:

- Canada Institute for Science and Technical Information collection (NRC-CISTI)
- Current social science databases
- Web searches (Google and Google Scholar)
- Selection of key documents in the cluster literature (Greenbook, Redbook, Cluster Policy Whitebook, Porter's work)



Output

25 current and relevant documents

Methodology – Identification and definition of the most prevalent factors

- Selection and synthesis of the most relevant excerpts taken from the literature in order to generate a definition



Output

12 cluster growth factors

The Identification of Cluster Growth Factors Based on an Analysis of the Literature - Methodology

Methodology – Validation of Results

- Comparison of the 12 factors with those identified by the United Kingdom Department of Trade and Industry (2004)

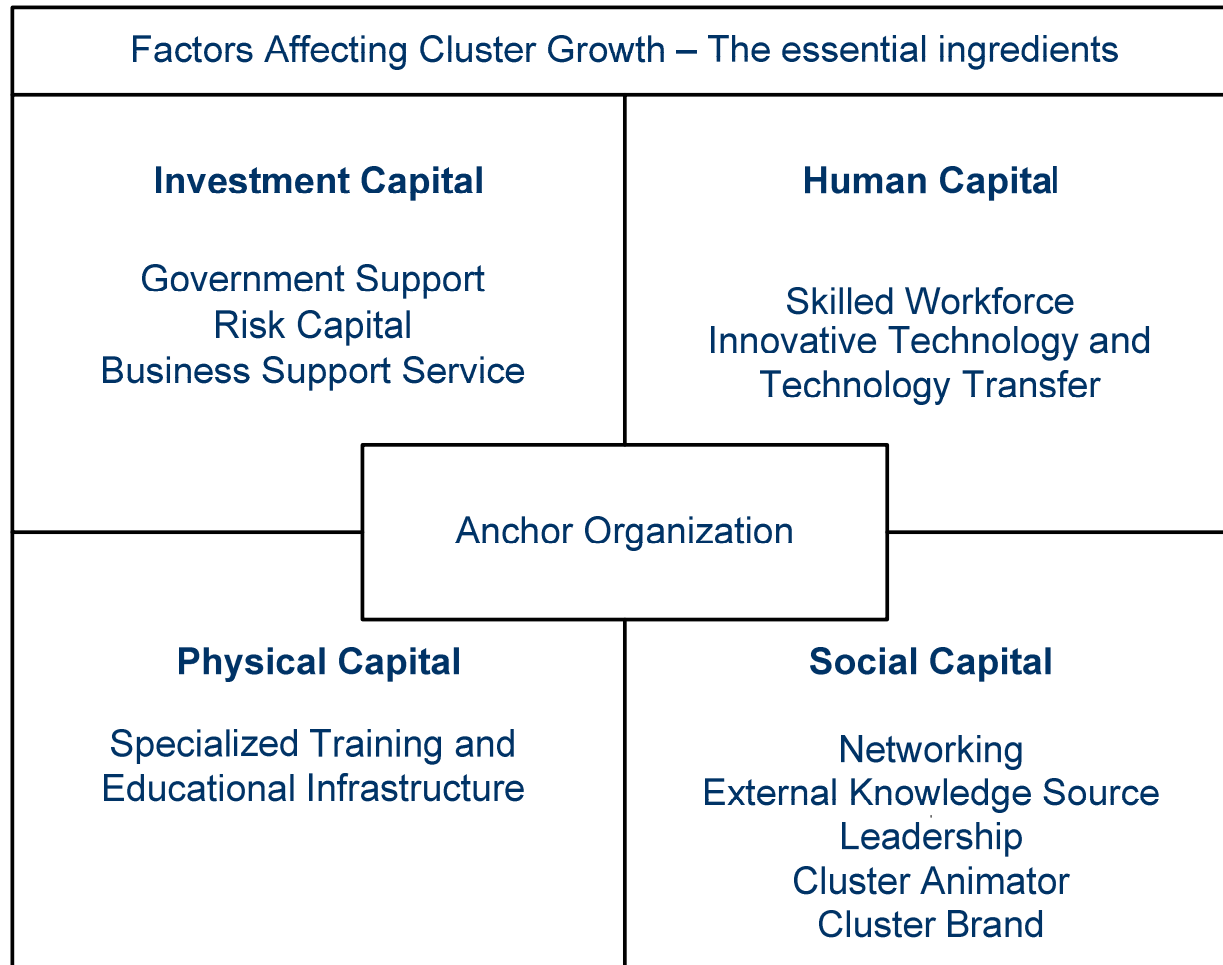
Figure 1: Critical success factors in cluster development



Source: DTI (2004), A Practical Guide to Cluster Development conducted, England's Regional Development Agencies

The Identification of Cluster Growth Factors Based on an Analysis of the Literature – Findings

The Twelve Cluster Growth Factors



The Identification of Cluster Growth Factors Based on an Analysis of the Literature – Description of Factors

Description of Factors – Human Capital

■ Skilled Workforce

- Helps attract and retain firms in region
- Source of innovation and agent of knowledge / technology transfer
- Supplied by multiple actors

“One of the most consistent findings thus far concerns the centrality of skilled labour as the single most important local asset. The local endowment of ‘talent’ in the labour force is emerging as a crucial determinant of regional-industrial success.”
(Wolfe & Gertler, 2004, p. 1087)

“Innovation maintains the cluster at the forefront of the market whilst a strong R&D base can provide the ideas and products for future development.”
(DTI, 2004, p. 34)

■ Innovative Technology and Technology Transfer

- Strong networks ensure the flow of knowledge and transfer of technologies
- Universities and public laboratories are catalysts of research and innovation

The Identification of Cluster Growth Factors Based on an Analysis of the Literature – Description of Factors

Description of Factors – Social Capital

■ Networking

- Main element of any cluster development strategy
- Feature that distinguishes geographic concentration of industries from clusters
- Importance of networking between clusters

“ The existence of established spatially proximate knowledge networks is commonly considered to be one of the key reasons why a number of the most successful localities and regions throughout the world have become or remained more industrially competitive than those not adopting a networked approach (Lawson & Lorenz, 1999; Saxenian, 1994).”
(Huggins, 2008, p. 278)

“ Bathelt et al. (2002) maintain that successful clusters are those that are effective at building and managing a variety of channels for accessing relevant knowledge from around the globe.” (Wolfe & Gertler, 2004. p. 1077)

■ External Knowledge Sources (Global Pipelines)

- Enable access to new sources of knowledge and innovation at the global scale
- Enable cluster actors to develop their ability to respond to new sources of ideas

The Identification of Cluster Growth Factors Based on an Analysis of the Literature – Description of Factors

Description of Factors– Social Capital

■ Cluster Animators

- Facilitate the establishment of networks
- Act as “network brokers” between firms and cluster support organizations
- Provide a structure for the management and coordination of common activities

“It appears that in order to strengthen the competitiveness of the cluster a clear cluster brand needs to be developed.”
(Lundequist & Power, 2002, p. 699)

“In the best cases network organizations can facilitate and animate whole cluster development strategies. Sector bodies can play a key role in terms of networking and have the advantages of being market-led and company focused.”
(DTI, 2004, p. 27)

■ Cluster Brand

- Strengthens the attraction of the cluster
- Unites the actors around a common identity and purpose
- Complements marketing activities of firms

The Identification of Cluster Growth Factors Based on an Analysis of the Literature – Description of Factors

Description of Factors– Social Capital

■ Leadership

- Provides a direction and a drive in the strategic orientation of the cluster
- Exercised by an individual or an organization
- Critical at the embryonic phase of cluster development

“ Private-sector leadership is often critical for success. Active government participation in a privately led effort, rather than an initiative controlled by government, will have a better chance of success.”
(Porter, Council on Competitiveness, 2001, p. 71)

The Identification of Cluster Growth Factors Based on an Analysis of the Literature – Description of Factors

Description of Factors– Investment Capital

■ Risk Capital

- Availability of risk capital is crucial for the growth of cluster firms, especially SMEs
- Financial risk has to be shared by both private and public sector actors

“ The ability to access finance contributes to the successful development of clusters through supporting the growth and expansion of cluster-related activities. This includes access to venture capital, specialist resources and financing (e.g. for inward investment), public and private R&D funding, business angels and investor networks.”
(DTI, 2004, p. 47)

“ Thus successful clusters need not only be self-organized by private actors, as Porter suggests, indeed public sector resources and crucial regulation may be vital.”
(Lundequist & Power, 2002, p. 698)

■ Government Support

- Builds knowledge and research infrastructure
- Provides funding in support of clustering activities
- Provides supportive policy environment

The Identification of Cluster Growth Factors Based on an Analysis of the Literature – Description of Factors

Description of Factors– Investment Capital

- **Business Support Services**
 - Complement the technical and scientific services provided by other actors
 - Facilitate improvements in firm performance

“ To successfully contribute to cluster development business support activities must be tailored to the particular needs of the specific cluster.”

(DTI, 2004, p. 49)

The Identification of Cluster Growth Factors Based on an Analysis of the Literature – Description of Factors

Description of Factors– Physical Capital

■ Specialized Training and Educational Infrastructure

- Critical role of universities and public R&D laboratories
- Provider of research infrastructure
- Train the local skilled workforce

“ The key assets that determine the viability of a cluster are firm-based. Of particular importance is the emergence of a lead or anchor firm for the cluster. Whole clusters can develop out of the formation of one or two critical firms that feed the growth of numerous smaller ones.”

(Wolfe & Gertler, 2004. p. 1074)

“Universities and specialized research centers were instrumental in providing the driving force for innovation in nearly every region we studied.”

(Porter, Council on Competitiveness, 2001, p. 43)

Description of Factors– All Types of Capital

■ Anchor Organization

- Defining factor that has given rise to several clusters
- Incites the emergence of industry specific value chain
- Universities and public R&D facilities can also play this role

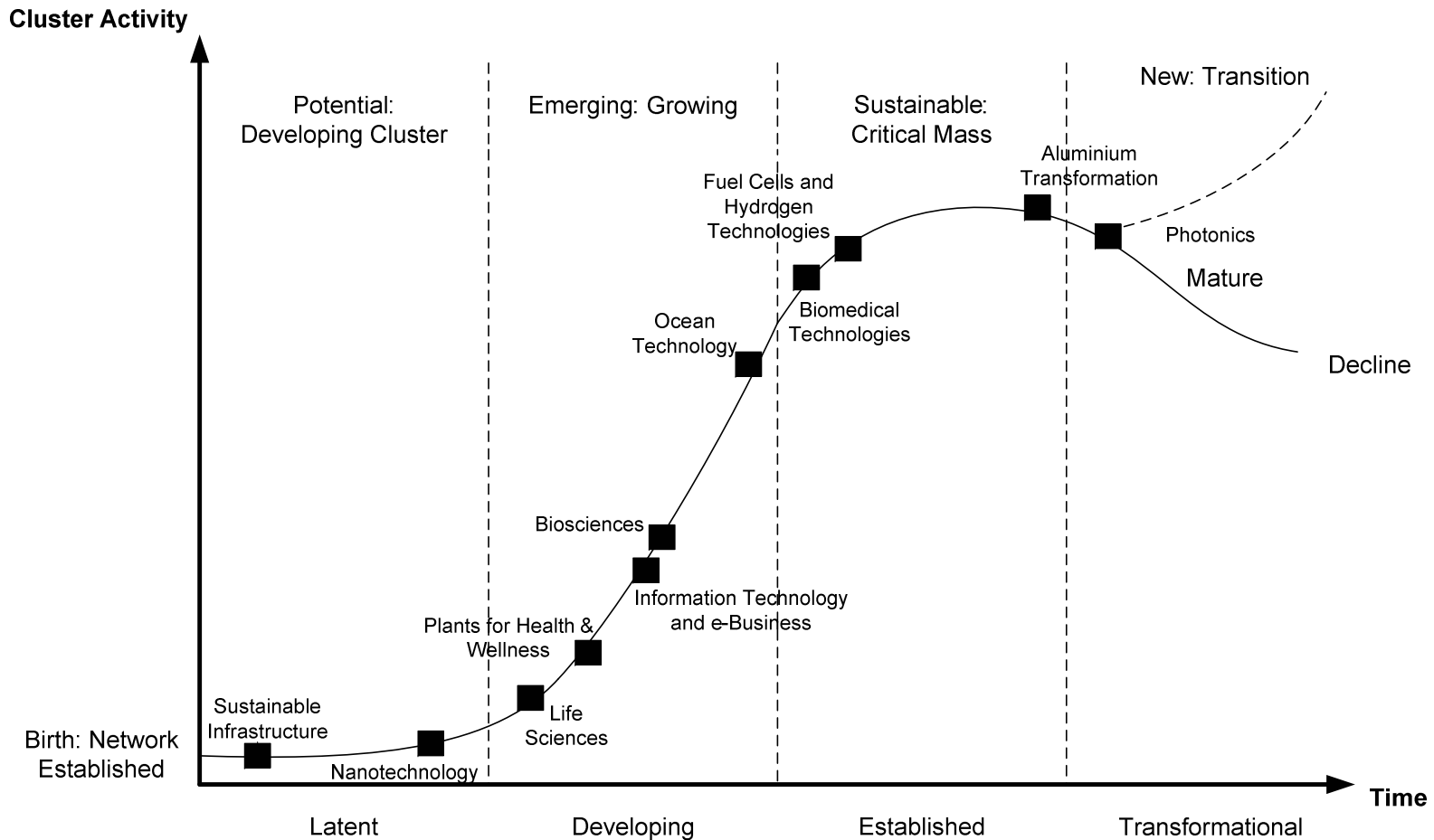
The Identification of Cluster Growth Factors Based on an Analysis of the Literature – Utilization of Results

Utilization of Results

- Study conducted early in the evaluation process
- Analysis of the status of each factor at the cluster level for each of the eleven cluster initiatives
- Assessment of NRC's specific contribution to the development of each factor
- Cross-comparison of cluster initiatives in order to generate findings at the portfolio level
- Judgment on NRC's performance in supporting the growth of technology clusters
- Positioning of each cluster initiative along the cluster lifecycle model

The Identification of Cluster Growth Factors Based on an Analysis of the Literature – Utilization of Results

Positioning of the clusters along the cluster lifecycle model



The Identification of Cluster Growth Factors Based on an Analysis of the Literature – Implications for Future Evaluations

Implications for future evaluations

- Analysis of NRC's contribution to the growth of selected factors depending on the stage of development of each cluster
- Development of performance indicators for the measure of these factors
- Collection of performance data or information on the cluster given the scope of the next evaluation. This evaluation will focus on:
 - Assessing NRC's contribution to the creation, attraction, growth and competitiveness of cluster firms
 - Measuring the program's expected intermediate and long term outcomes
 - Measuring Canada's return on investment
- Explore the role of entrepreneurship as an important growth factor

The Identification of Cluster Growth Factors Based on an Analysis of the Literature – Conclusion

Conclusion

- Importance of using the literature as an objective source of information to:
 - Understand the theory behind a program or a policy
 - Integrate the knowledge and lessons learned of social scientists and policy makers in the design of the evaluation
 - Determine the criteria against which the success of a program can be assess

- Importance of recognizing that a literature review can be:
 - Complex and time consuming
 - but it provides a robust and credible knowledge that other evaluators can use in future evaluations

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Thank you!
Merci!

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