Clusters – A Definition

- Clusters are geographic "regional" concentrations of interconnected companies and institutions in a particular field (Porter, 1998, 2000).
- Clusters consist of co-located and linked industries, government, academia, finance and institutions for collaboration (The Cluster Initiative Greenbook, 2003).
- Clusters can have a positive impact on the competitiveness of its firms:

  **Collective efficiency** (Schmitz, 1995):
  - Passive external economies (spill-over effects)
  - Consciously pursued joint action (within horizontal or vertical linkages)
Global Value Chain – A Definition (I)

- Vertical disintegration of transnational corporations and fragmentation of production processes provide new opportunities for developing country SMEs (doctrine of core competence).

- Fragmentation can lead to cross-border production networks within or between firms (Amdt & Kierzkowski, 2001).

- Value-added chain as a process by which technology is combined with material and labour inputs, and then assembled, marketed and distributed. The single firm may consist of only one link in this process or it may be extensively vertically integrated (Kogut, 1985).

- Global value chain (GVC) as vertically interrelated productive activities performed by firms in different geographical locations to bring out a product from conception to complete production, and distribution to the final consumer.

Global Value Chain – A Definition (II)

Source: Holensen 2004, Global Marketing
Global Value Chain and Governance

Coordination between the different actors of the GVC may occur through arm’s-length market relations or non-market relationships.

Non-market relationships can be distinguished according to three types of governance (Humphrey and Schmitz, 2000):

- **Network**: cooperation between firms of more or less equal power.

- **Quasi-hierarchy**: relationships between legally independent firms that are subordinated to each other with a leader in the chain defining the rules.

- **Hierarchy**: a firm is owned by an external firm.

Upgrading in Global Value Chains

Upgrading as a concept of *making better products, making them more efficiently, or moving into more skilled activities.*

Upgrading as innovating to increase value added (Giuliani et al., 2005):

- **Process upgrading**
- **Product upgrading**
- **Functional upgrading**
- **Intersectoral upgrading**

→ Acquisition of competitiveness on the firm-level (*competitive advantage*) as a result of innovation and upgrading.
**Upgrading and the Microenvironment**

Microeconomic business environment critical in driving innovation and the upgrading of competitive advantage by a nation's firms (Porter's diamond model):

- **Context for firm strategy and rivalry**
  - Factor (input) conditions
  - Demand conditions
  - Related and supporting industries

→ Creation of “dynamic” diamonds important for cluster growth and innovation!

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**Context of 3D-Animations in Colombia**

- 3D-Animation as one of the fastest growing industries world-wide.
- 3D-Animations used for TV commercials, TV show/serial promotions and –identity packages, TV channel branding (all in our cases).
- Colombia as the world's third largest producer of TV serials *Telenovelas*.
- Colombian TV market dominated by two national private channels: RCN, Caracol.
- RCN, Caracol increasingly engaged in international strategic alliances for production and distribution.
- Increasing Hispanic population in the US.
- Penetration of major US-based TV channels and – networks into Latin America.

Source: [http://www.virtualamericas.net/graphics/americas.gif](http://www.virtualamericas.net/graphics/americas.gif)
Value Mapping for 3D-Animations in Colombia

Characteristics of 3D-Animation Firms in Colombia

- Established over the last three years.
- Turnover below 1 million US$.
- Average number of employees: 15.
- Fragmented market with a view established firms complemented by a scattered market of freelancers.
- Talented labour as most important asset, followed by technological equipment.
- Increased importance of R&D expenditures.
- Mainly located in Bogota, and international presence in some cases in USA and Canada (Canada as a "global cluster" for 3D-Animations).
- Software capabilities for 3D animated design still mainly acquired through self-education.
Research Results: Awareness and understanding of the GVC

- US and Canada considered as most attractive markets because of demand conditions
- Strong rivalry among local providers
- Colombia as a "creative hub" for some transnational advertising agencies
- Not familiar with the concept of a (global) value-chain
- 3D-animation producers outsource audio (voice, music, composition) and in some cases graphic design
- Outsourcing partners are mainly located in the same city

Research Results: Cooperation within the GVC

- Possibilities of image upgrading while dealing with renowned national/international clients
- Quality, delivery time and price as most important criteria for supplier selection
- Positive spill-over effects (skill upgrading)
- Absence of long-term contracts (long-term cooperations however possible and favoured)
- 3D-animation firms fully independent in their choice of own providers
- International clients more demanding than national
Research Results: Dynamics of the cooperation, assets and competencies (I)

Interviewed firms do not belong to any industry association

Inter-firm cooperation between 3D-animation producers

Dynamics of the cooperation, assets and competencies

Shared clients
- Sub-renting of office space
- Technical equipment is borrowed/rented among "rival" firms
- Outsourcing to "competitors" if capacity limits are reached

Spillover effects in form of knowledge acquisition from former employees of nations/international client firms

Considered key assets
1. Talented personnel
2. Technological equipment

3D-animation firms increasingly do possess more specialized key assets than their national/international clients (technological sophistication of the industry)

Research Results: Dynamics of the cooperation, assets and competencies (II)

Not being able to follow rapid pace of technological innovations because of financing constraints to acquire latest technology

Possibility for an increased in-house production of 3D-animations by national/international clients

Attract and retain talented people

Considered threats
- Price
- Creativity
- Delivery time

Considered key strengths
- English language skills (some cases)
- Presence US, Canada (some cases)

Self-education and learning by doing still dominates acquisition of software expertise for 3D-animations

Dynamics of the cooperation, assets and competencies
Research Results: Needed governmental support to enhance the role of 3D-animation firms in GVCs (I)

- So far, no governmental support received!
- Needed governmental support to enhance the role of 3D-animation firms in GVCs
  - Key issues considered as important by 3D-animation firms
    - Promotion of local talent (high tuitions restrict access to necessary training programs)
    - Tax reductions or credit facilitation to acquire needed technology
    - Lessening of visa restrictions for Colombian citizens by foreign governments to facilitate international business travelling

Research Results: Needed governmental support to enhance the role of 3D-animation firms in GVCs (II)

- So far, no governmental support received!
- Needed governmental support to enhance the role of 3D-animation firms in GVCs
  - Key issues considered as important by 3D-animation firms
    - Facilitating employment of temporary foreign workers to benefit from their specialized skills
    - Promotion of English language communication skills
    - Strengthening the role of the governmental business support organization Proexport to promote and position the Colombian 3D-animation business in international markets
Importance of Participation in GVCs

Cluster effect

Importance of participation in GVCs

Stability: more steady order inflow and hence a more constant revenue flow

Increased potential for positive spill-over effects (skill upgrading)

Potential for better margins (compared to national clients)

Cluster Evidence

Existence of competition and cooperation among the interviewed firms

Porter’s diamond (1)

Strong local rivalry

Porter’s diamond (2)

Increased specialized and advanced “factors of production” (mentioned key assets)

Porter’s diamond (3)

Sophisticated and demanding buyers (especially international clients in the GVC)

Dynamic diamond as a potential for cluster growth and innovation
Policy Measures

- Facilitate local capacity building and training

- Support cluster promotion activities in international markets to strengthen positioning in GVCs

- Intensity cooperation with stakeholder institutions such as Chambers of Commerce and Business Support Organizations

- Active participation of regional and local authorities

- Strengthening the linkage of cluster firms with related/supporting institutions (Porter's diamond)

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Key opportunities for SME participation in GVCs

- Fragmentation of production processes creates new market niches for goods and services in which SMEs can position themselves utilizing their relative advantages in flexibility, innovativeness and specialization.

- New opportunities for the international sourcing of scarce specialized skills.

- SMEs can internationalize faster and cheaper through GVCs.

- SMEs can participate in different GVCs, hence securing their growth.

- SMEs can follow on the strategy of their foreign partners in GVCs and engage in outsourcing and offshoring.

- They can learn and innovate in fast track manner.


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Importance of Regional Innovation Systems

- **Region becomes the strategic level** at which industrial innovations and upgrading take place.

- Countries compete based on their **regional/location specific assets**: skills (talent) formation; interactive learning processes between SMEs in their clusters, and between SMEs and other stakeholders in the location; modern infrastructure and logistics capabilities.

- **Regional Innovation Systems (RIS)** is a system of networks of SMEs, their clusters, research institutes, organizations providing business development services and government representatives.

- National Innovation System (NIS) approach has been dominant in the past, now RIS is gaining in importance because of GVCs and their impact on local innovation and learning.


Cluster-Regional Innovation System-Global Value Chain Linkages

Cluster Development as National/Regional Policy – Examples (I)

2007: Most advanced clusters: Energy distribution, Apparel, Construction, Business Tourism & Conventions (82% Micro® Firms with less than 10 employees)
2005: Launch of “Business Network Initiative” for Internationalization by Proexport Colombia
2004:
• Municipal Development Plan for Medellin (2004-2007)
• Regional Competitiveness Agreement for the Energy Cluster
2001:
• Regional Competitiveness Agreements for the clusters: Apparel (women underwear), Construction, Fruits and Vegetables, Furniture, Tourism
1999:
• National Plan for Productivity and Competitiveness (1999-2009)
• The Competitive Advantage of Antioquian Business Activities in the 21st century
1995: Monitor Study Medellin
1994: Monitor Study Colombia

Cluster Development as National/Regional Policy – Example (II)

Source: Mantilla, 2007
Publications


- UNCTAD (2007), "Report of the expert meeting on increasing the participation of developing countries’ SMEs in global value chains". Available online: http://www.unctad.org/ Templates/meeting.asp?innItemId=1942&lang=1&m=13513&info=doc


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