The Roles of Intermediaries in Clusters: The Thai Experiences in High-Tech, Mid-Tech Manufacturing, Knowledge-Intensive Service, and Community-based Clusters

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Outline of Presentation

- Industrial Clusters and Intermediary Organisations
- Thailand’s STI Policies: Towards more Cluster Specific?
- Thai Cluster Experiences
  - Hard Disk Drive
  - Bus’s Body Assembly
  - Software
  - Chilli Paste
Cluster and Importance Roles of Intermediaries

CUSTOMERS
- Export
- Domestic

INDUSTRY
- Large TNC
- Large Domestic
- SME
- Start-Ups

LINKAGE
- Intermediaries
- Metrology and Standards

OTHER KNOWLEDGE SOURCES
- Research Institutes
- Universities
- Vocational Training
- Foreign Technology Sources

INSTITUTIONAL CONTEXT
- Regulatory and Legal Frameworks
- Trust
- Entrepreneurship

Source: adapted from Arnold et al. (2000)
Thailand’s STI Policies: Towards more Cluster Specific?

- Past: No selective industrial policies to promote targeted industries/clusters
- Thaksin Regime (until Sept. 2006)
  - Selective policies (5 strategic industrial clusters: Food, Automotive, Fashion, Software, Tourism) e.g. cluster-specific investment incentives
  - 19 Geographical clusters nationwide
  - NIS and industrial clustering concepts are at the heart of 10-year S&T Strategic Plan (2004-2013)
Thai Cluster Experiences
Hard Disk Drive Cluster

TNCs-led, High-tech Manufacturing Cluster
Importance of HDD to Thailand

- 1st in the world rank of HDD exporter after Singapore (or around 10 billions US$ in 2005)
- Employs more than 100,000 people
- Dominated by giant TNCs like Seagate, IBM/Hitachi, Western Digital and Fujitsu
- Local content is around 30-40
- The cluster concentrates around central and northeastern regions, near Bangkok.
The HDD Cluster in Thailand

1. HGA/HSA/HDD Assembly
   - Hitachi Global Storage
   - Fujitsu
   - Seagate
   - Western Digital
   - Union Technology

2. Motors
   - Minebea
   - Nidec Electronics
   - TDK
   - JVC Components

3. Suspension
   - KR Precision
   - Magnecomp

4. Base Plates
   - Altum Precision
   - Wearnes Precision
   - Bayonics
   - Shinei
   - MMI Precision

5. Flex Assembly
   - Mektec Manufacturing
   - Innovex
   - PEMSTAR

6. Other Activities
   - Gem City Engineering
   - Thai Inter Calibration
   - Other Precision Engineering/Integration Service Providers

Government
- NSTDA
- BOI
- MOI
- Thai EEI

Associations
- ECEA
- FTI
- IDEMA

Overseas
- DSI (Singapore)

Academia
- KMITL
- KMUT
- Khon Kaen
- Chulalongkorn
- Suranaree
- AIT
- Thai-German Inst.

International Disk Drive Equipment and Materials Associations (IDEMA)

- Founded in 1986, as an international not-for-profit trade association representing $22 billion HDD industry worldwide.
- IDEMA, Thailand established in 1999.
- Its committee includes all giants, main suppliers, representatives from concerned government/education institutes like Board of Investment, Asian Institute of Technology and National Electronics and Computer Technology Centre.
The Bridging Roles of IDEMA

• A platform for business networking & information sharing (through training courses, market updates and advance technology seminars)

• Focuses on what Thailand needs: development of HR and automation infrastructure (e.g. with AIT providing Certificate of Competence in Storage Technology)

• Worked with BOI to make HDD cluster a “prioritised” cluster receiving special tax privileges for investment to enhance skills, technology development and Innovation.

• Established “a HDD cluster managing organisation” led by experienced cluster manager
Banpong Bus’s Body Cluster

A Mid-Tech Manufacturing Cluster
Relying on ‘Mature’ Technology
- Banpong District, Rachaburi Province, 100 km. from BKK
- > 40 firms
- Total production 1,500 buses/year
Initial Characteristics

• An agglomeration of small Thai-owned firms, located in the countryside of a developing country, and competing in a global industry

• Not parts of TNCs’ global production network

• Accumulated ‘tacit’ craftsman-type skill for designing and assembling passenger buses tailored to diverse demands of customers

• Weakness:
  • Inability to satisfy large order volume
  • Limited knowledge in high-precision designing & production
  • Limited marketing and management skills
  • Limited information, knowledge linkages
  • virtually no linkages with local non-firm agents
Roles of Thai Automotive Institute (TAI) Since 2004

- Facilitating the changing of roles of the existing ‘Association of Banpong Bus’s Body Assemblers’ from a mere political lobbying group to the organisation promoting mutual trust and joint activities/learning through TAI’s sponsored seminars and informal meetings.

- Facilitating linkages between firms and non-firms agents
  - local technical college, Rachaburi Technical College 2: a specific vocational program on body assembling technology.
  - Provincial authority (CEO governor): ‘strategic’ provincial cluster
  - A local public training institute, Labour Skill Development Institute Region 4: training on critical assembling skills
Cluster Map of Banpong Bus’s Body

Customer (domestic/foreign)

Core activities

- After-sale Services
- Dealers/Distributors
- parts suppliers & material providers

Bus Body Assemblers

Supporting services

- purchasing
- marketing
- Transportation
- Testing/quality assurance
- Management Quality Assurance
- Financial services

Upstream industries
- Iron
- Plastic/rubber
- Colour/chemical
- electronics
- glass
- Cloth/leather
- Machine
- equipment
- mold

Provincial/National Supporting Agents

- TAI/ FTI Rachaburi
- Rachaburi Technical College 2
- Financial Institute
- Rachaburi provincial authorities

Source: TAI
After TAI’s Supports

• Able to assemble with higher precision
• Able to combine their existing tacit craftsman skills with external scientific knowledge e.g. selecting suitable material inputs
• Division of labour and joint activities among firms enabled them to receive larger order volume from customers
Software Cluster

Knowledge-intensive Service Cluster
Software Park Thailand

Established in 1997 under National Science & Technology Development Agency, the largest RTO in Thailand, which has both research expertise and experiences in helping firms to enhance their technological capabilities through several financial & technical supporting programs.
Intermediary Activities of Software Park:

- Facilitate cluster-based learning among tenants within the Park (50 tenants)
- Provide training and linkage with outside knowledge sources such as TNCs (e.g. IBM, SUN, HP, Oracle), local and foreign universities
- Provide tools to raise standard of software production eg. Capability Maturity Model (CMM)
Grilled-Fish Chilli Paste Cluster

Cluster Based On Local Knowledge and Wisdom
History and Status of Wat Tuptimdang Community

- Located at Tambon Klong Song, Pathumthani Province, around 80 kms from Bangkok.
- Dated back more than 100 years ago.
- 1031 inhabitants and 171 household in 2002.
- Most are farmers, Buddhists, fair economic status, only primary/secondary education.
- Close community of relatives, simple life, and close to nature.
Local Knowledge/Wisdom of the Community

- Rather stable community and way of life
- Local knowledge in agriculture (mixed animal and plant farming), handicraft and food processing and preserving
- Most are tacit embodied in individuals and their relationships
- Abundance of fish
- Grill fish Chilli Paste is local knowledge/wisdom passed orally from one generation to another
Cluster Map of the Production of Chilli Paste with Grilled Fish

Government Promoting & Regulating Agencies
- Development Provincial Authority
- Health District Authority
- Food and Drug Authority
- Commerce Provincial Authority
- Cooperative Provincial Authority
- Live Stock District Authority
- Cooperative District Authority

Community Networks
- Klong Luang Women Cooperative Group
- Klong Luang Cooperative Group
- Saving Group for Agriculture
- Community Shop
- Klong Luang Cooperative Agriculture Group
- Klong Luang Women Cooperative Agriculture Group

Knowledge Institutes
Rajabhat Phetburiwittiyalongkorn

General Suppliers
Farmers producing raw materials
Vegetable-growing farmers
Can/packaging factories

House Wife’s Association
Grilled Fish Chilli Paste
Other Chilli Paste

Specialised Suppliers
- Rangsit Market (Talad Thai) providing specific ingredients for making grilled fish chilly paste

Specialised Service/Infrastructure Providers
Market
- Exhibitions
- Trade Fairs
- Future Park
- Rangsit Department Store

Financing
- Provincial Commerce Authority

Customers
- Local customers
- Ordinary Thai customers

Source: Derived from Rajabhat Petchaburiwittiyalongkoorn (2002)
Intermediary Roles of Klong Song House Wife Association

• Established in 1992 with 19 members and assistance of Agriculture District Authority
• Chaired by charismatic and respected person
• Members to hold shares (1.25 US$/share, 100 shares maximum)
• Revenue of selling chili paste is around $1,500/month
• A platform to promote career advancement and increase in incomes of members
• A platform for solidarity and enhancement of community strength
In the context of developing countries, the cluster concept should be perceived as an important ‘development tool’

The concept can be applied for:
- technologically high-tech manufacturing dominated by TNCs’ investment and knowledge
- Knowledge-intensive services which need start-up incubation
- mid-tech manufacturing relying on ‘mature’ technology
- community-based relying on local knowledge & wisdom.
Conclusion (2)

- Industrial associations can stimulate the ‘clustering’ process leading to more interaction and knowledge sharing among actors.
- Government sector-specific authorities can behave like intermediaries stimulating the formation of knowledge linkages between local firms & local non-firm agents.
- RTOs having organisational flexibility & accumulated knowledge/HR can act as bridging intermediaries between TNCs & local firms.
Conclusion (3)

- Community-networking organisations having local knowledge and trust of local people can play important roles in diffusing knowledge and encouraging innovation and entrepreneurship at the grass-root level.

- Government policies should focus on strengthening capabilities of these organizations to perform such roles.
Thank You Very Much For Your Attention