

Industrial Clusters in the Tokai Region and the Region's Industrial Competitiveness

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Focus on Tokai 3

- Aichi, Gifu and Mie Prefectures (ex. Shizuoka), or the Greater Nagoya Region
- One of the most prosperous regions in Japan, accounting for 9.5% of Japan's GDP
- Dominated by machinery industries, particularly the automobile industry and has other industries such as housing, textiles, food and ceramics

Focus on the Innovation-enhancement Side of Industrial Clusters

- Industrial cluster can be thought of a common space for an industrial concentration to create knowledge
- Knowledge-creation is the process of dynamic interaction between tacit knowledge and explicit knowledge
 - While the IT revolution has enabled the expanded use of explicit knowledge, tacit knowledge is still relevant.

Two-types of Industrial Architecture

- Industries with Modular Architecture
 - Constituting parts are developed and produced independently and connected with standard interfaces.
 - Explicit knowledge is important.
 - IT industries, etc.
- Industries with Integral Architecture
 - Difficult to standardize. Close collaboration is necessary.
 - Tacit knowledge is important.
 - Automobile, machinery industries, etc.

Questionnaire Survey

- Sent questionnaires to about 3,800 firms.
- 379 answered.
 - 70% from Tokai3 (234 from Aichi, 13 from Gifu and 9 from Mie)
 - 3% from the rest of the Chubu region
 - 22% from Kanto region (74 out of 82 from Tokyo)
- Tokai3 firms are biased to:
 - Smaller firms
 - Manufacture sector

Main Questions of the Questionnaire

- Fields and approaches of innovative activities
- Linkages for innovation
- Hiring and development of human resources for innovative activities
- Directions of industrial clusters in the Tokai 3

Sticking to Existing Areas

Type of Innovation Approaches

Choice of answer	Tokai3 Firms	Firms outside the Region
Further innovation in existing areas	40%	29%
Combination in existing areas	39%	51%
Combination between existing areas and new areas	17%	17%
Totally new areas	4%	3%
Number of answers (Multiple answers)	319 (100%)	151 (100%)

Approach to Innovation

- Focus on the manufacture area, particularly in the transportation sector
 - Environmental protection, transportation equipment and systems, and safety
 - Less emphasis on the IT, the service sector, marketing and business models
- Prefer to innovating in existing areas
- Evolutionary rather than revolutionary innovation
 - Evolve into new areas when necessary

Focus on Inter-firm Relations for Innovation

The Most Important Entity for Linkage in Innovation Activities

Choice of Answer	Tokai3 Firms	Firms outside the Region
Partner Firms for Joint Product Development	43.1%	44.1%
Suppliers of Parts and Materials	18.3%	4.5%
Universities	11.1%	10.8%
Research Institutes	6.5%	1.8%
Professional Services Other than IT and Financial	6.1%	13.5%
IT Services	3.8%	8.1%
Local Governments	3.4%	2.7%
Financial Services	1.9%	9.0%
Start-up Firms	1.9%	2.7%
Central Government	0.4%	0.9%
Others	3.4%	2.7%
Number of Answers (Multiple answers)	262 (100%)	111 (100%)

Strong Preference for Linking with Partners in the Same Region

The Most Important Region as the Location of Entities for Linkage in Innovation Activities

	Tokai 3	Other Chubu	Kanto	Kinki	Other Domestic	Overseas
Related and Supporting Firms	72.4%	2.2%	19.4%	1.3%	1.3%	3.4%
Universities as Research Partners	76.2%	2.0%	16.8%	1.5%	1.5%	1.5%
Research Institutes	70.0%	1.0%	24.6%	1.0%	1.5%	2.0%
IT Services	70.7%	0.5%	24.2%	0.5%	1.5%	2.5%
Financial Services	73.8%	1.0%	21.8%	1.9%	0.0%	1.5%
Other Professional Services	67.5%	0.5%	28.0%	2.0%	1.0%	1.0%
Start-up Firms	64.5%	2.7%	26.8%	1.6%	1.1%	3.3%

Linkage for innovation

- Emphasize inter-firm collaboration mainly in technology development and de-emphasize linkage with IT, financial and other professional service firms for marketing and business model innovation
- De-emphasize linkage with start-up firms
- Strong preference for linkage with parties in the same region
 - Complementary relations with parties in Kanto
- Consistent with the requirement of industries with the integral architecture

Those with initiatives and IT engineers are needed

Lacking Human Resources Necessary for Innovation Activities

Choice of answer	Tokai3 Firms	Firms outside the Region
Those with entrepreneurship	24.2%	26.0%
Project leaders	19.9%	22.6%
Researchers in general	16.9%	7.2%
Those with marketing capability	11.8%	21.2%
IT engineers	11.3%	9.1%
Management and administration	7.9%	5.8%
Personnel management	2.6%	2.4%
Financial management	2.6%	1.0%
Biotechnology experts	1.5%	1.9%
Other	1.3%	2.9%
Total answers (Multiple answers)	467	208

Preference for Hiring New Graduates

Method of Hiring and Training of Employees for Innovation Activities

Choice of answer	Tokai3 Firms	Firms outside the Region
Hire new graduates and train them internally	51.6%	38.3%
Hire people with working experience	36.6%	52.3%
Train employees at outside training organizations	6.7%	4.7%
Outsource human resource	3.1%	3.7%
Other	2.0%	0.9%
Total	100.0%	100.0%
No. of answers	254	107

Preference for Hiring Employees in the Vicinity

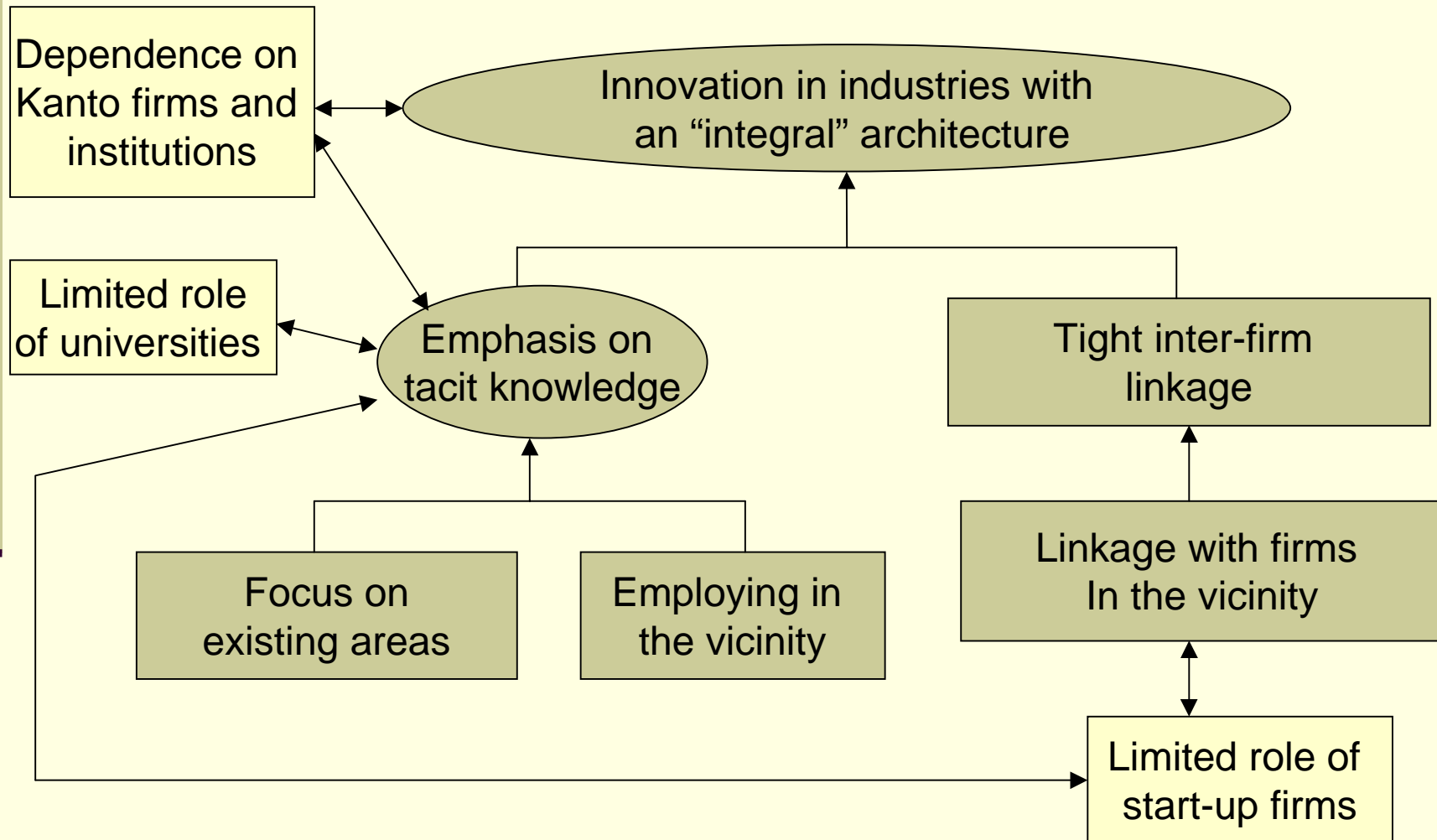
The Important Region for Hiring Innovation-related Employees for Tokai3 Firms

Choice of answer	Hiring New Graduates		Hiring the Experienced	
	Most	Second	Most	Second
Tokai Region	84.0%	8.7%	83.6%	8.0%
Other Chubu Region	0.8%	61.5%	0.9%	63.6%
Kanto Region	8.4%	19.0%	9.8%	17.6%
Kinki Region	1.3%	3.6%	2.2%	5.7%
Other Domestic	5.5%	4.1%	3.6%	2.3%
Overseas	0.0%	3.1%	0.0%	2.8%
Total	100.0%	100.0%	100.0%	100.0%
No. of Answers	237	195	225	176

Human Resource Development – Main Findings

- Preference for hiring new graduates and training them on the job
- Lacking human resources are those with initiative and leadership rather than those with technical expertise and explicit knowledge.
- Preference for recruiting in the vicinity
- Those features are consistent with the requirements of industries with the integral industrial architecture which utilize a great deal of tacit knowledge.

Institutional Complementarity of Industrial Clusters in Tokai 3



Inclination to Maintain Manufacture-orientation

Future diversity of Industrial Clusters in the Tokai Region

Choice of answer	Tokai3 Firms	Firms outside the Region
Diversification and value-addition centering on the manufacturing sector	59%	52%
Continue to center on manufacture industries	16%	7%
Diversification to local services such as sightseeing and nursing aged population	10%	11%
Diversification to knowledge-intensive services such as financial and IT services	8%	20%
Diversification to the bio-technology area	7%	9%
Other	1%	1%
Total	100%	100%
No. of answers (multiple answers)	333	138

Implication for the Tokai Region's Cluster Strategies

- Wise to preserve the strength of industries with integral architecture together with the institutional complementarity
- Better to develop the elements of industrial clusters, which can be complementary to existing industrial clusters and help to diversify them
 - Universities with stronger post graduate courses
 - Industries with modular architecture and those based on local community
 - Knowledge-intensive supporting service industries such as IT and financial services
- More focus on internal ventures in creating new businesses and industries
 - Together with start-up firms and inward FDI
- More horizontal and independent inter-firm relationships