

Chapter 2 Possibilities for Revitalizing Industrial Integration Areas through Network Building

2.1 Changes Occurring in Industrial Integration Areas and Network Building

The major production bases of the Japanese machine industry have been undergoing quantitative and qualitative changes during the past few years, in response to the business diversification of major equipment makers and large and medium-sized suppliers, who have so far supported Japan's machine industry. The trends towards translocation of production facilities overseas and expansion of parts procurement sources by large and medium-sized suppliers as well as by small and medium-sized manufacturers have also played a role.

The domestic production bases of the Japanese machine industry have maintained and developed their manufacturing capabilities by adapting according to the theories of "economy of scale" and "economy of scope," while taking advantage of the merits of accumulation of production bases. More recently, however, the Japanese machine industry has begun to stress not only the benefits of "economy of scale" and "economy of scope," but also the "economy of networking." As a result, various industrial areas have been under increasing pressure to adjust to accommodate the new theory of "economy of networking." In this chapter, realities of industrial integration, which is currently undergoing a dramatic transformation, will be examined. New approaches to revitalize industrial areas will then be discussed with reference to the possibilities of network building.

2.2 Realities of Major Industrial Integration from the Statistical Perspective

Among Japan's major industrial areas described in the Industrial Statistics of Japan, Yamagata (full prefecture), Nagano (Matsumoto and Suwa districts), Osaka (Higashi Osaka City) will be taken up and the changes in their situations reported.

1) Changes Occurring in the Industry of Yamagata Prefecture

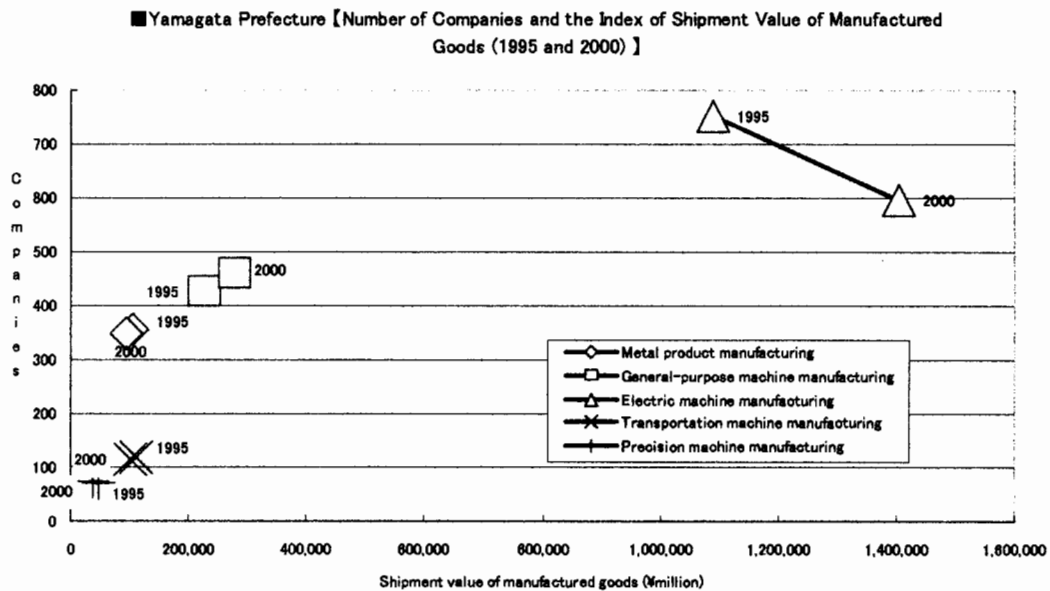
Chart 1 shows the changes occurring in the machine industry in Yamagata prefecture during the past five years. While the number of businesses engaging in electric machine and appliance manufacturing, the main segment of Yamagata's machine industry, decreased sharply, the value of manufactured goods shipments increased, suggesting that this segment is undergoing integration and shakeout. In the area of general machine and appliance manufacturing, both the number of businesses and the shipment value dropped. At least two factors seem to have contributed to the substantial decline in the number of businesses in electric machine and appliance manufacturing: first, there has been an acceleration of the shifting of production bases to the East China region (particularly the Shanghai area), in addition to the South China region, as part of the rapid trend of industrialization in China; and, second, major electronic manufacturers have outsourced increasingly from overseas EMS companies since

2000.

At the same time, according to a survey on “overseas operation of SMEs in local industries” conducted by the Nihon Keizai Shimbun, Inc., in July 2001 (reported in the July 23, 2001 issue of the Nihon Keizai Shimbun newspaper), the percentage of companies already engaged in overseas operation reached 13.3% (up from 5.2% in 1994). The ratio in Yamagata prefecture was 18.0%, surpassing the national average. In Yamagata, 43.5% of respondents consider that “hollowing out” of industries has already taken

place in the prefecture. Both chart 1 and the results of this survey suggest that electric machine and appliance manufacturing in Yamagata is currently undergoing a rapid deindustrialization process. In an effort to respond to this situation, some small and medium-sized manufacturers in the Shonai district of Yamagata have entered into collaboration with the academic sector, including such institutions as Yamagata University and the Technical Junior College.

Chart 1 Changes Occurring in Industrial Integration Areas in Yamagata (Prefecture-wide)



Source: Industrial Statistics

2) Changes Occurring in Industrial Integration Areas in Nagano Prefecture

Chart 2 shows changes that have taken place in machine industry in Nagano prefecture during the past five years. While the number of businesses engaging in electric machine and appliance manufacturing, the main segment of the Nagano machine industry, is in decline, the shipment value of manufactured goods has increased slightly, a trend similar to that seen in Yamagata. Among other segments, the number of businesses in precision machine manufacturing has increased, and the shipment value for this segment has shown a modest increase as well.

In Okaya, Suwa and the surrounding municipalities have taken various measures to revitalize their local industries and to respond to pressures of globalization. The following are some outstanding examples of such endeavors.

① The Network Function of "Techno Plaza Okaya"

Okaya City established Techno Plaza Okaya in June 2002. The main objectives and functions of this plaza include the following: to serve as a base for interaction and exchange among local industries; to provide learning opportunities; to provide business support; and to serve as an information bank. Techno plaza organizes various information exchange events, training and education programs, trade shows where new products are exhibited and other PR activities with the aim of serving as a nodal point for local businesses.

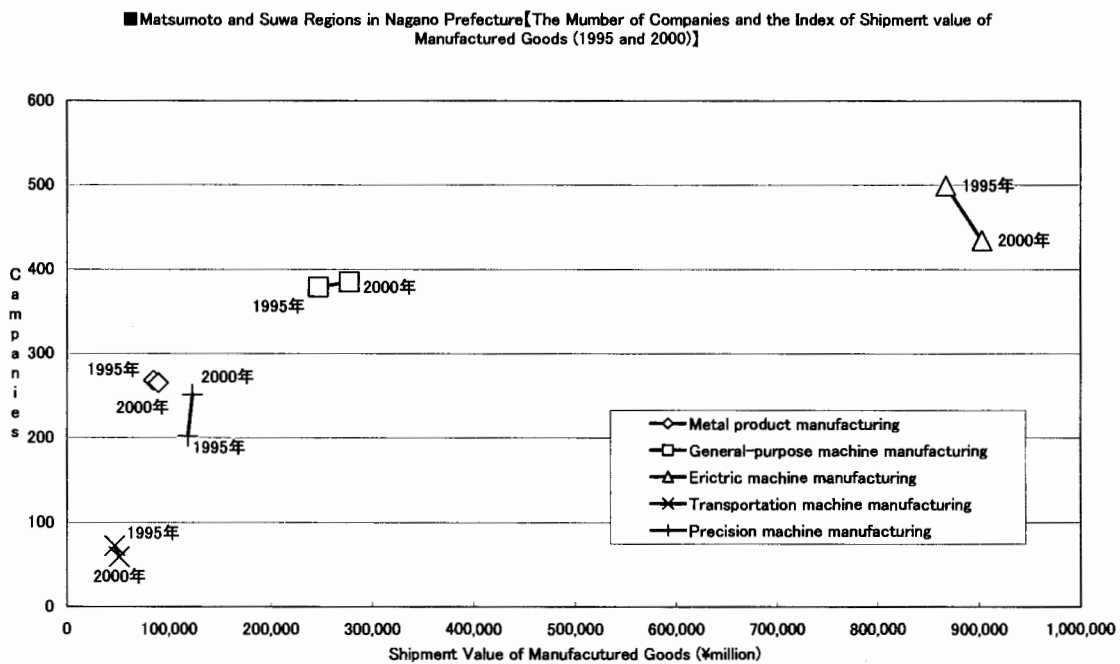
② Analyses of Business Opportunities in China by the Suwa Municipal Government

In July 2002, the Suwa municipal government organized a China study mission (with participation by 16 SMEs) led by the Governor for the purpose of exploring new business opportunities in China, a rapidly emerging industrial power. The mission visited Shenzhen, Shanghai and Dalian to study the potential of these areas. As a result, the municipal government now has a closer relationship with Dalian, in particular. Through these and other endeavors, the government is attempting to strengthen its support for local SMEs that wish to find new business opportunities in China.

③ "Suwa Regional Business Messe"

The municipal governments of Okaya and Suwa, together with the Chambers of Commerce and Industry of surrounding municipalities, co-organized the "Suwa Regional Business Messe" for the first time in October 2002. This initiative represents a concerted effort toward the broader area collaboration expanding beyond the region, to include adjacent local municipalities, each of which used to organize similar projects independently in the past. This project deserves keen attention, therefore, as a new approach toward revitalizing local industries with the Suwa brand as the core value.

Chart 2 Changes Occurring in Industrial Integration Area in Nagano (Matsumoto and Suwa districts)



Source: Same as Chart 1.

3) Changes Occurring in Industrial Integration Areas in Higashi Osaka City

Chart 3 shows the changes that have taken place in industrial integration in the machine industry of Higashi Osaka City during the past five years. As demonstrated by the chart, the main industrial segments of the machine industry of Higashi Osaka are "metal product manufacturing" and "general-purpose machine manufacturing." The shipment value of both segments decreased sharply during the past five years, suggesting serious deindustrialization in the city.

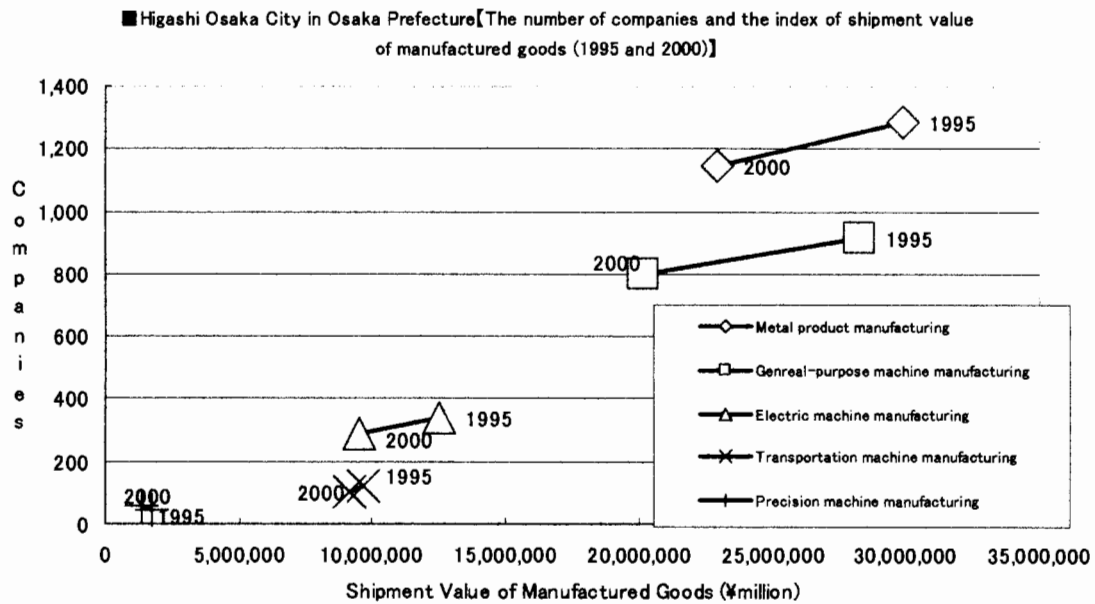
Higashi Osaka, like Tokyo's Ota ward, is characterized by urban-type industrial accumulation where famous "back-street workshop manufacturing" thrives. The number of shops reached 10,033 at the peak-time in 1983

but has dropped to somewhere around 8,000 now. Five factors could be responsible for the hollowing-out of Higashi Osaka during the two decades. First, decrease in orders from automobile and consumer electronics makers, which have led Japanese industries, due to their oversea relocation aimed at averting the adverse effects of appreciation of the yen; second, an increase in business closures due to a lack of successors; third, difficulty in maintaining business due to a population increase in urban areas, an over-concentration of offices and soaring land prices; fourth, a decrease of new business opportunities in the manufacturing sector as Asian companies increasingly catching up and unstoppable waves of globalization sweep over the sector; and fifth, a decreased entrepreneurial spirit among young people, due partly to the indulgence accorded them in this age of lower birth rates.

Nevertheless, the Higashi Osaka Chamber of Commerce and Industry is playing a leading role in promoting and supporting small and medium-sized manufacturers. What draws

special attention here is the establishment of several research groups with the aim of creating new business as follows: (See Chart 4).

Chart 3 Changes Occurring in Industrial Integration Areas in Higashi Osaka City, Osaka



Source: Same as Chart 1.

Chart 4 Research Groups Aiming at Creating New Business

①Higashi Osaka Aerospace Research Group

Inaugurated in July 2002. Participation by 31 companies. Aims to build a small satellite (30-50 kg) within 3 years.

②Higashi Osaka Micro Processing and Micro Measuring Research Group

Inaugurated in June 2002. Participation by 24 companies. Will pick up 2-3 topics of interest among nano technology projects introduced by the Japanese government.

③Higashi Osaka Environment Business Research Group

Inaugurated in July 2002. Participation by 26 companies. Will focus on 2 topics among such categories as recycling and sustainable energy resources.

(Supplementary Remarks)

In addition, cross-group projects are also on the move: Groups 1 and 2 are planning a "Nanosat and Picosat – super-small satellite development project," Groups 2 and 3, a "low-noise, compact fuel cell development project," and Groups 3 and 1, a "high efficiency engine development project

(for small and medium-sized aircraft)." Source: Results of interviews conducted in Higashi Osaka

2.3 Industrial Integration and the Present Situations of Network Building

The Economic Research Institute, Japan Society for the Promotion of the Machine Industry, conducted a survey concerning the "present situations of industrial integration and network building" among small and medium-sized manufacturers in the machine and metal industries in Yamagata, Nagano, Aichi and Fukuoka prefectures during November and December 2002.¹ Based on the results of the survey, the realities of network building in four industrial areas will be described.

1) Merits Generated by Industrial Integration

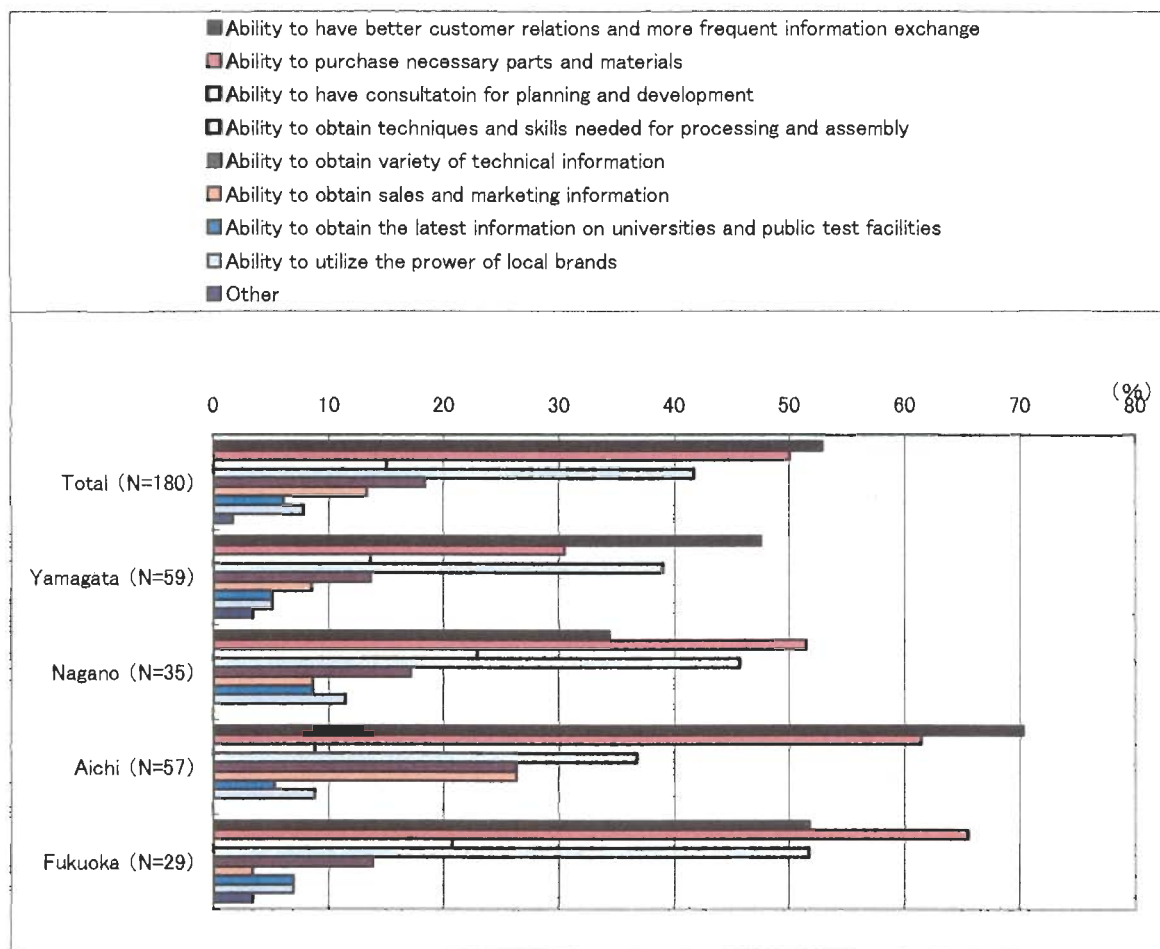
Chart 5 shows the responses concerning the merits (positive effects) generated by industrial integration (in the geographical area surrounding the company head office in the prefecture), which positively influence small and medium-sized manufacturers in the concerned area. As shown in the chart, "better customer relations and more frequent information exchange," "an ability to purchase parts and materials," and "an ability to obtain techniques and skills needed for processing and assembly" are regarded the three major merits of industrial integration. In Aichi, on the other hand, "better

¹ The questionnaires were given to 2,000 SMEs in the machine and metal industries in 4 prefectures: Yamagata, Nagano, Aichi and Fukuoka. There were 18 effective responses, and the collection rate was 9%. Refer to Machine Industry Economy Research Report, "Restructuring Industrial Integration and the Present Situations of Network Building - Manufacturing Taking Advantage of Local Resources" (H14-4).

relations with main customers and more frequent information exchange,” and “an ability to purchase of parts and materials” scored extremely high in contrast to the other prefecture. “An ability to obtain variety of

technical information” and “an ability to obtain sales and marketing information” also scored high. In the case of Nagano, “an ability to utilize the power of local brands” scored higher relative to the other prefectures.

Chart 5 Merits Generated by Industrial Integration(N=180)



Source: Survey concerning “the present situations of industrial integration and network building” conducted during November and December 2002

2) Networking Activities within the Area of Industrial Integration

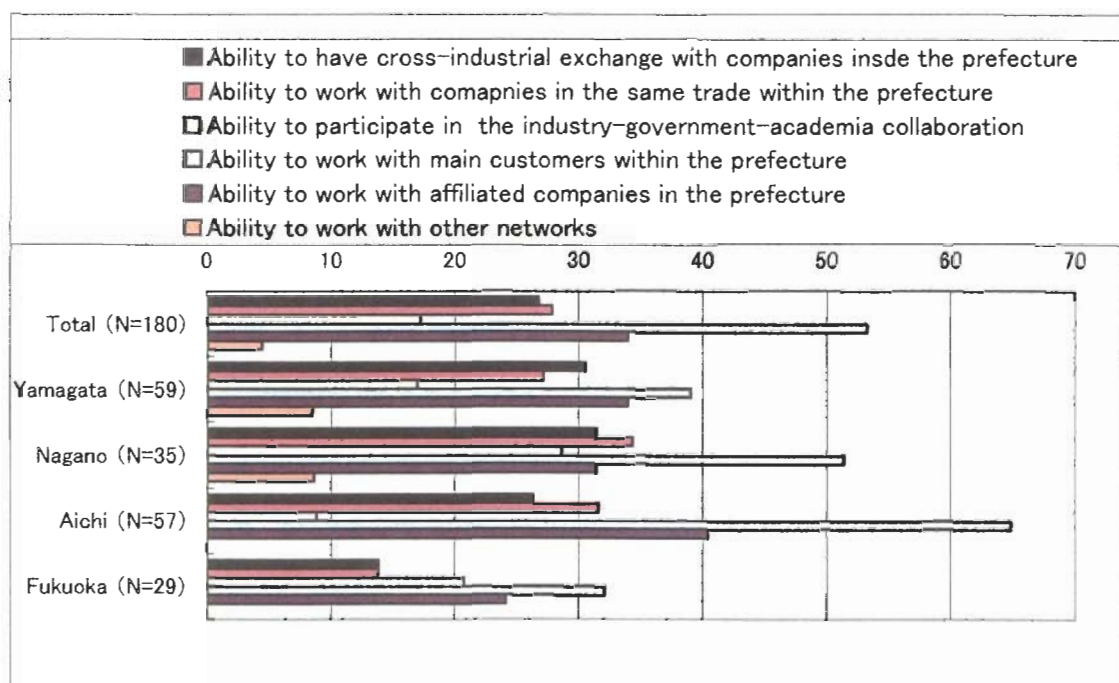
Chart 6 shows the responses concerning the types of intra-prefectural networking activities within the industrial area. As the chart shows, “working with main customers

within the prefecture” and “working with affiliated companies within the prefecture” scored highest, suggesting that companies, in general, tend to form networks with customers and affiliates within the same prefecture. This tendency is particularly conspicuous in Aichi

when examined on a prefectural basis. In Fukuoka, on the other hand, more companies tend to emphasize “networking with main customers within the prefecture.” In Nagano and Yamagata, companies seem to be engaged in various types of networking activities, rather

than simply networking with customers or affiliates within the prefecture. Nagano, in particular, engages more frequently “intra-prefectural business-government-academia collaboration” networking activities as compared to the others.

Figure 6 Networking Activities within the Industrial Integration Areas (N=180)



Source: Same as Chart 5

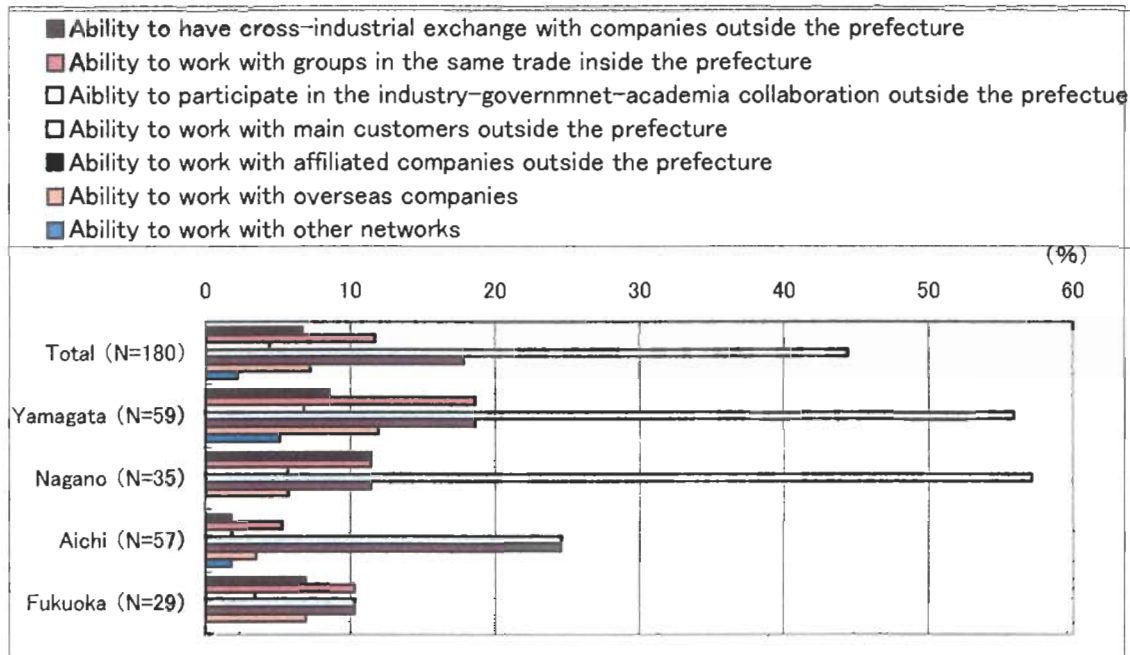
3) Networking Activities Outside the Industrial Areas

Chart 7 shows the responses concerning the types of extra-prefectural networking activities outside the industrial areas. As shown in the chart, “working with main customers outside the prefecture” was the most frequent type of activity, suggesting that companies, in general, tend to emphasize networking with customers outside the prefecture. By prefecture, this tendency is most conspicuous in Nagano, followed by Yamagata and then Fukuoka.

Aichi, on the other hand, indicates a completely different tendency: “working with main customers and affiliates outside the prefecture” scored highest. In Yamagata, respondents seem to be engaged in networking activities with “companies of the same trade outside the prefecture” and with “overseas companies” more frequently. In Nagano, networking activities “with businesses in other trades,” “with groups in the same trade outside the prefecture,” and “with affiliates outside the prefecture” accounted for a certain percentage, suggesting that these

respondents are engaged in more diverse networking activities than the others.

Chart 7 Networking Activities Outside the Industrial Integration Areas (N=180)



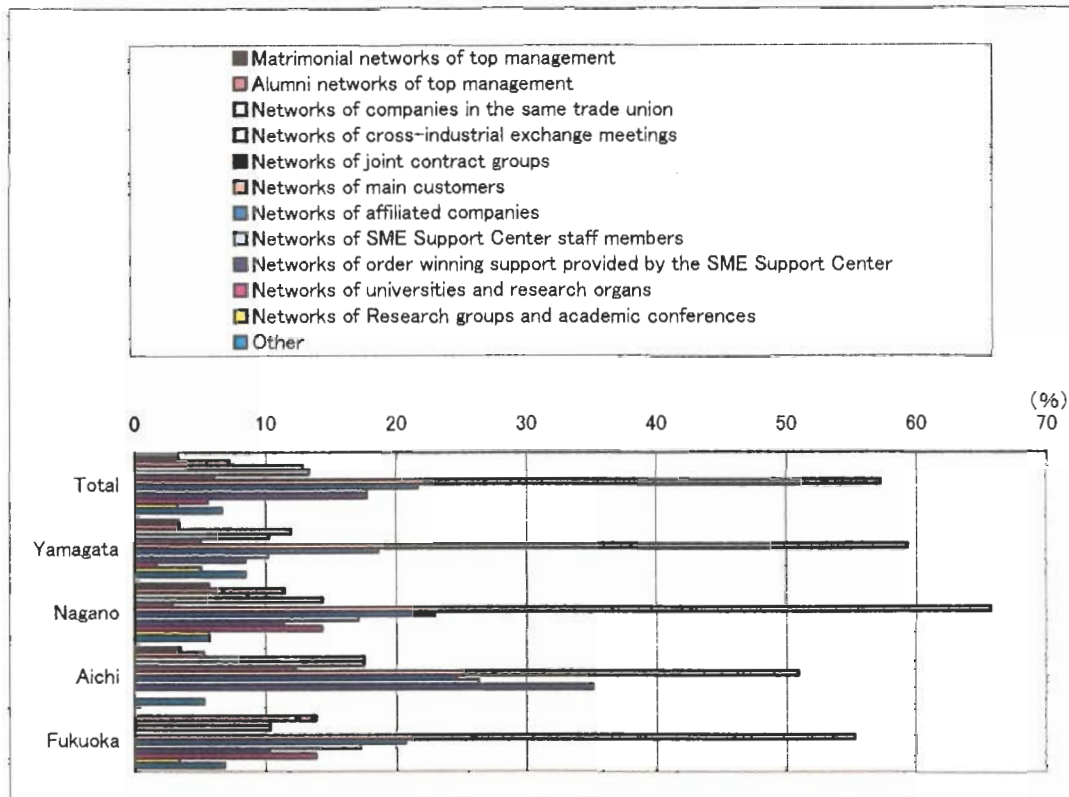
Source: Same as Chart 5

4) Networking Contributing to Establishment of New Business Relations

Chart 8 shows the responses of small and medium-sized manufacturers who indicated that networking activities contribute to establishing new business relations. As shown in Chart 8, the response that network activities help them obtain “information concerning main customers and introductions to new customers” accounted for the largest percentage. Acquiring “information concerning affiliates and introductions to new customers” placed second. “Information provided by the SME support center” and “order winning support provided by the SME support center” account for a certain percentage. Although there are no significant

regional differences among the top ranking items, there are some regional distinctions. Respondents in Yamagata, for instance, regard a “network of trade associations” and “network with other industrial sectors” as effective. Those in Nagano find a “network with other industrial sectors” and an “alumni network of top management” effective. In Aichi, on the other hand, “order winning support provided by the SME support center” is regarded as more effective, and a “network of trade associations” and a “network of joint contractors group” are also considered effective. In Fukuoka, an “alumni network of top management” and “network of universities and research institutes” are regarded as effective.

Figure 8 Networks Contributing to Establishment of New Business Relations (N=180)



Source: Same as Chart 5

5) Presence of a Key Person in a Company

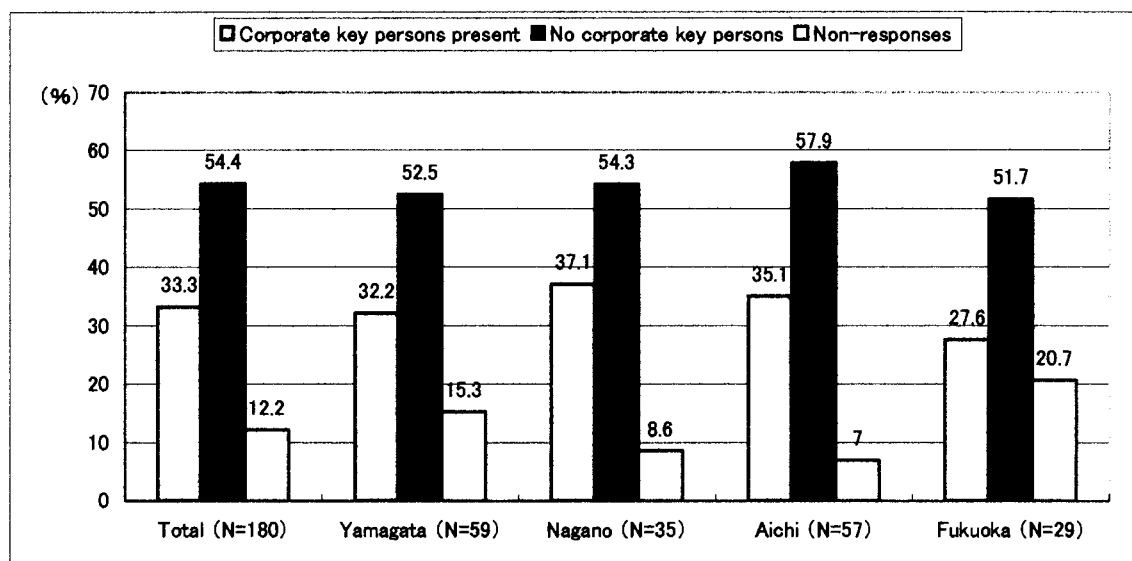
Chart 9 shows the responses concerning the presence of a dependable key person in a company within the industrial area (excluding non-responses). As shown in the chart, the ratio of companies responding that there is a dependable key person among the companies in the prefecture was below 40%. Considered by region, the percentages were 38% in Yamagata, 40% in Nagano, 37.7% in Aichi, and 34.8% in Fukuoka. Nagano recorded a relatively higher score than the others.

The presence of a corporate key person is

considered to be an important factor for revitalizing an industrial area. This is because a key person plays the role of a “nodal point” that connects various companies and organizations when they form a network of entities inside and outside the area.

Interviews conducted in Okaya, the Suwa district of in Nagano, Higashi Osaka City of Osaka, and the city of Fukuoka in Fukuoka prefecture by the Economic Research Institute of the Japan Society for the Promotion of the Machine Industry also confirmed the importance of a key person in revitalizing local industries.

Chart 9 Presence of a Key Person in Companies (N=158)



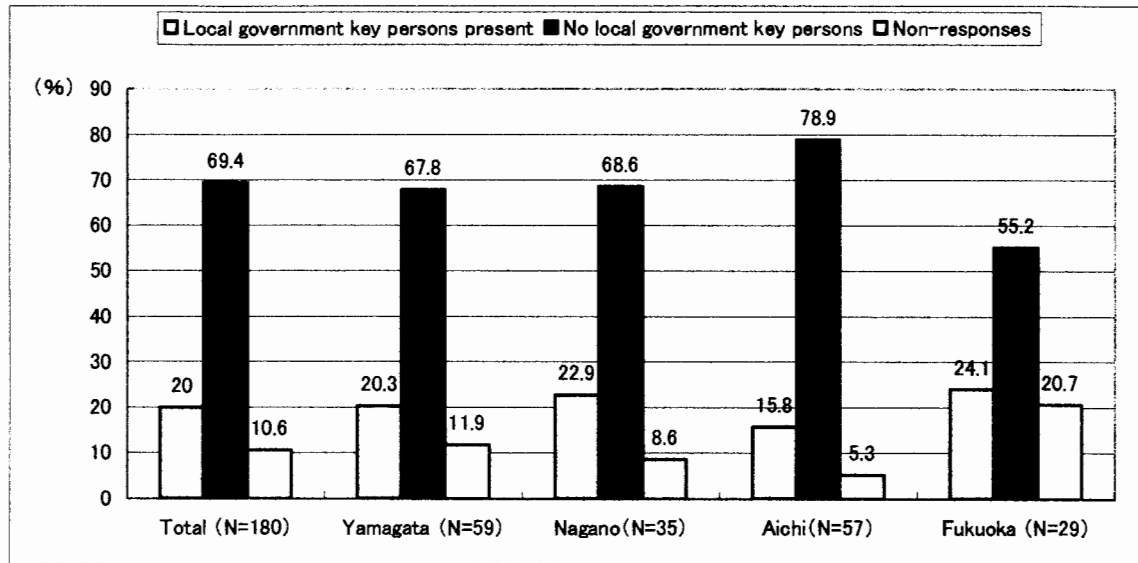
Source: Same as Chart 5.

6) Presence of a Keyperson in the Public Sector

Chart 10 shows the responses concerning the presence of a dependable key person in the public sector (excluding non-responses). As shown in the chart, the ratio of those recognizing the presence of a key person in the public sector was less than 20%, lower than that for a corporate key person. Considered by region, the ratio varies from 23.1% in Yamagata to 25.0% in Nagano, 16.7% in Aichi and 30.4% in Fukuoka. The ratio in Aichi is particularly low.

It has been revealed by the survey results so far, however, that the network of small and medium-sized companies in Aichi is more likely to be centered on "main customers," "affiliates" and "joint contract groups." In other words, they tend to form networks of companies that are already engaged in actual business transactions. It is, therefore, possible to interpret Aichi's results as representative of "network building without depending upon a public sector key person."

Chart 10 Presence of a Key Person in the Public Sector (N=161)



Source: Same as Chart 5.

7) Presence of a Key Person in Universities and Research Organs

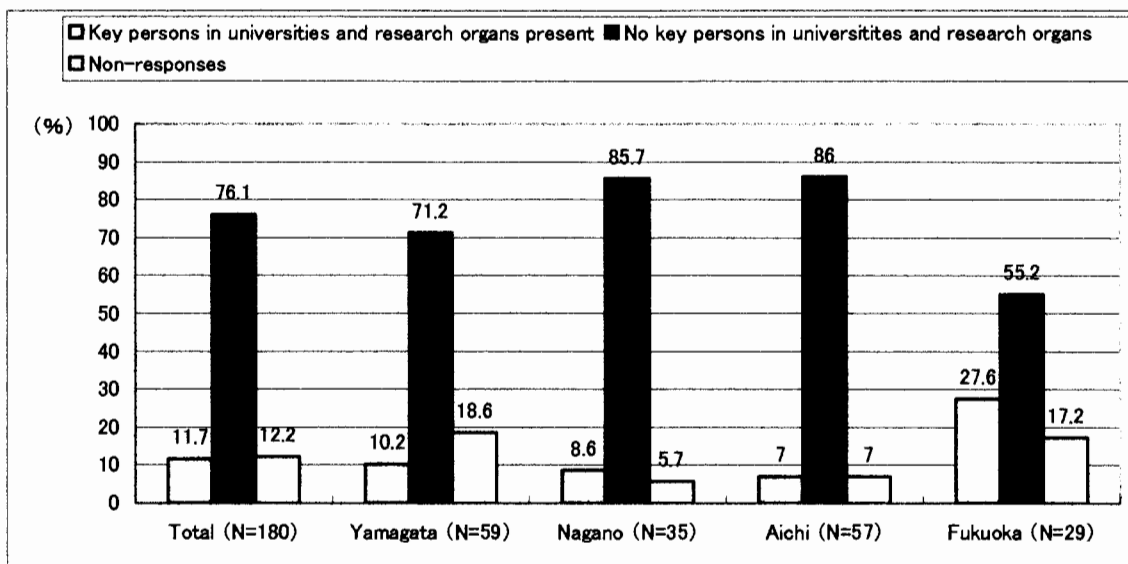
Chart 11 shows the responses concerning the presence of a dependable key person in universities and research organs (excluding non-responses). As shown in the chart, the ratio of those recognizing the presence of a key person in universities and research organs was only around 10%, an extremely low percentage. The ratio, however, varies from region to region. While the ratio was over 30% in Fukuoka, the ratios in Aichi and Nagano were far below 10%.

Small and medium-sized manufacturers consider that there are few dependable key persons in universities and research organs.

This is perhaps because there are few people

who serve as bridges between companies and the academic community. In the interviews, some companies responded that they “feel somewhat awkward in associating with universities.” Although joint research projects and technology transfers between universities and TLOs (Technology Transfer Organs) have become active in science and engineering universities in recent years, we should point out here that relationships between small and medium-sized manufacturers in the machine and metal industries and the academic sector seem still to be extremely immature.

Chart 11 Presence of a Key Person in Universities and Research Organs (N=158)



Source: Same as Chart 5.

2.4 Toward Revitalization of Industrial Integration

1) Findings of the surveys

The findings obtained from the surveys concerning the present situations of industrial integration and network building can be summarized as follows:

① Shrinking Integration

Industrial integration in most areas, except Aichi, described in the main industrial categories of 10 regions (this chapter picked up 3 out of 10) in the Industrial Statistics showed a tendency toward contraction both in the number of businesses and the shipment value.

② Network Building and Wide-Area Collaboration

Interviews conducted in the various industrial areas revealed the importance of a "nodal point" in building a network. The results of interviews of companies in Okaya and Higashi Osaka City, in particular, revealed that these

municipalities are working proactively to help create new businesses and industries by organizing various research groups and support projects. It has also been confirmed that the Okaya and Suwa districts of Nagano have promoted wide-area collaboration through such event as the "Suwa Region Industrial Messe," positioning the Suwa brand as its core.

③ Network Characteristics Differing from Region to Region

The following findings have been revealed by the questionnaire: in Aichi, the network of trading partners of small and medium-sized manufacturers is more likely to comprise companies located within the same prefecture, and the companies emphasize trading with main customers, affiliates and joint contract groups; in Fukuoka, the scope of the network extends well beyond Kyushu, reaching as far as Osaka, Tokyo and Aichi, suggesting a tendency for companies to engage in a wide-area network; in

Nagano, companies seem to expand their scope, and they have a strong tendency to form business-government-academia collaboration type networks; in Yamagata, it appears that trading partner networks extend to such regions as Tohoku, East Japan, Tokai and Kinki.

④ Importance of the Presence of a Key Person

The survey concerning the existence of a key person, conducted among small and medium-sized manufacturers in Yamagata, Nagano, Aichi and Fukuoka reveals that, although presence of a "corporate key person" has been confirmed to a certain extent in general, the presence of a "public sector key person" or a "university and research organ key person" appears not to be conspicuous.

2) Proposals for Revitalizing Industrial Integration

The following are proposals for creating an environment that will help revitalize machine industry integration areas, to enable medium-sized manufacturers, in particular, to maintain viable business in Japan.

■ Reviewing "resources" in industrial areas

Small and medium-sized manufacturers, universities and research organs, and the public sector should review the characteristics of their local resources, e.g. each company's fields of strength, the universities' research fields, local human resources, and geographical and natural environmental features, so that they can focus on locally appropriate manufacturing.

■ Reviewing the regional "scope"

It is necessary for an industrial area to build complementary relationships with other

areas through interregional or wide-area collaborative networks, covering both surrounding and remote localities, without limiting them to a conventional scope (e.g. the scope of corporate and local government activities).

■ Utilizing a "key person" committed to and contributing to the local community

A "key person in the local government" can play a decisive role in forming a network, in general, and in linking private enterprise and the academic community, in particular. There are, therefore, an urgent need to foster and make available a "local government key person" who is committed to and able to contribute to the local community. It is also hoped that universities and research organs will reconsider the meaning of their presence in that particular locality. They should participate in activities that will help them contribute to the local community.

■ Enhancing "local capacity" by fostering local brands

If small and medium-sized manufacturers are to maintain and develop their manufacturing capabilities in Japan, they must be able to maintain their distinctive technologies and markets to differentiate them from overseas manufacturers, including those in China. Industrial areas in Japan, therefore, need to enhance their "local capacity" by mobilizing human resources from diverse industrial sectors in the community (for this purpose, the ideas not only of engineering university graduates but also of liberal arts graduates, and their market analysis capabilities will be required). Furthermore, in order to enhance the local

capacity more intensively and efficiently, it is urgently necessary to establish a local brand, which can represent the area in markets both in Japan and abroad. This local brand should be

compatible with the local identity. (Something that is borrowed, which is to say, something that does not originate in the locality, will soon be undermined).