

Project Commissioned by the Ministry
of Economy, Trade and Industry

Survey on R&D of Foreign-Affiliated Companies in Japan

Summary Report

March 2007

Japan External Trade Organization (JETRO)

Background and Purpose of Survey

Promoting investment in Japan “from an open stance” continues to be national policy under newly elected Prime Minister Shinzo Abe, as Japan pursues growth by becoming a center of innovation.

Within the context of investment in Japan, investment in R&D functions by foreign companies is expected to contribute to greater innovation in Japan, creating employment for highly-skilled personnel, encouraging industrial cluster formation regionally, and consequently activating the Japanese economy.

Multinational corporations are aggressively expanding their R&D activities using resources worldwide. Many experts have noted that, even as the US and other countries see the concentration of international cutting-edge research in biotechnology and the formation of industrial clusters, Japan lags behind as an international innovation center.

In view of this situation, this survey project was designed to ascertain the facts concerning R&D efforts by foreign companies in Japan and the contributions these efforts are making to Japan’s industry and economy, and to analyze Japan’s place in these companies’ global management of R&D as well as the factors that convinced them to set up R&D operations in Japan. Based on these analyses, the project then studied recommendations to attract further foreign company R&D to Japan to transform the country into an innovation center.

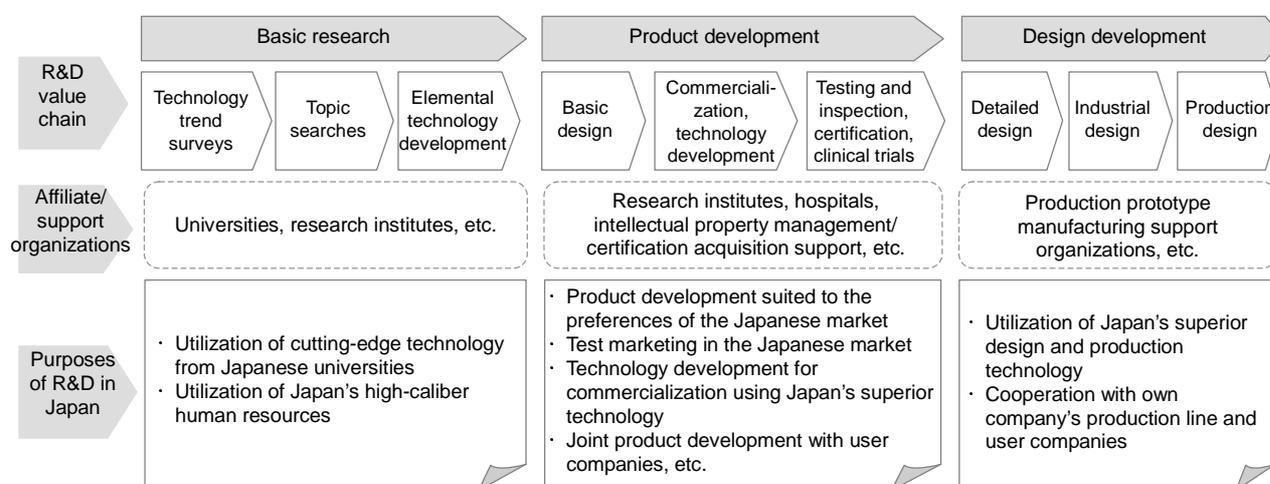
The cooperation of numerous foreign companies in both the questionnaire survey and the interviews was instrumental in conducting this project. A meeting of experts was also hosted to provide a forum for an exchange of views, and this gathering produced a broad range of opinions ranging from analyses of the status quo and current issues to suggestions for future inducement activities.

Survey Summary

1. Analysis perspectives and methods

Research and development (R&D) is defined variously by company and by industry sector, and the nature and format of R&D activities span a wide spectrum. For the purposes of analysis in this survey, R&D is broadly divided into three stages: basic research, product development and design development (certain questions in the questionnaire present even more finely divided classifications).

Diagram S-1 Classifications based on R&D value chain



Source) Prepared by Nomura Research Institute

This survey essentially utilized three methodologies to ascertain the present status of foreign company R&D. The first was to draft a list of companies with R&D functions from among foreign companies operating in Japan, and prepare/analyze a “List of Companies” that incorporated the attributes of these companies into a database. The second was a questionnaire survey conducted with this list serving as the parent group, and the third a series of case studies that analyzed several typical cases on the basis of interviews conducted with companies.

The “List of Companies” featured a total of 287 companies. The questionnaire survey targeted the companies named in this List, and responses were received from 64 companies (a response rate of 22.3%). The case studies focused on eight companies: three chemical companies, two pharmaceutical companies, one IT company, one food company, and one automotive company.

2. Status of foreign company R&D activities in Japan

2.1 Overview of foreign companies with R&D functions in Japan

Although it is difficult to ascertain the total number of foreign companies in Japan, the “*Gaishi-kei*

Kigyō So-ran (Comprehensive List of Foreign Companies)” (2006 edition, Toyo Keizai Inc.) listed 3,218 companies, not including financial companies. With 287 of these determined through the “List of Foreign Company R&D Centers” to have R&D functions, it would appear that about 10% of all foreign companies in Japan possess R&D functions.

According to the questionnaire results, about 40% of foreign companies with R&D functions in Japan were established in or prior to 1979. Approximately 53% have parent companies in North America, 45% in Europe, and only a tiny percentage in Asia and other regions. While US firms previously accounted for the vast majority of such companies, European companies have claimed an increasing percentage in recent years.

A look at capital subscription reveals that less than 40% of cases involved the establishment of a new joint venture company, while mergers with, acquisition of, or capital participation in existing companies and the establishment of wholly-owned subsidiaries accounted for about 25% each.

By industry sector, the chemical, pharmaceutical/cosmetics, transportation machinery/devices, electrical machinery/devices, and general machinery/devices industries had the highest percentages. Many of the companies had staffing levels in the 11-100-employee range.

Diagram S-2 Profile of typical foreign companies with R&D functions in Japan

Year of establishment	1979 or earlier (40%), 1990s (about 25%), 2000 or later (about 25%)
Nationality of parent company	North America (53%), Europe (45%) * Percentage of European companies on the rise recently
Capital subscription	Establishment of joint venture company (38%); merger with, acquisition of, or capital participation in existing company (27%); establishment of new wholly-owned subsidiary (25%)
Industry sector	Chemical (27%), transportation machinery/devices (12%), electrical machinery/devices (12%), general machinery/devices (11%), pharmaceutical/cosmetics (10%)
No. of employees	11-99 (41%), 100-999 (38%)

Note) All component ratios are approximate figures (decimal figures rounded up).

Source) Survey on R&D of Foreign-Affiliated Companies in Japan, “List of Companies” (industry sectors only)

2.2 Overview of foreign company R&D centers

Many of the R&D centers of foreign companies were founded in 2000 or later or in the 1990s, and so are relatively new. Staffing levels were about 24-30% respectively for “less than 10 employees,” “10 to 99 employees,” and “100 or more employees.” The number of foreign employees was zero at nearly half of the companies. The most common organizational format (about 60%) was that of a division of a Japanese corporation (manufacturer and distributor).

Diagram S-3 Profile of typical R&D centers of foreign companies in Japan

Year of establishment	2000 or later (35%), 1990s (26%), 1979 or earlier (21%)
No. of employees	10-99 (31%), 100 or more (29%), less than 10 (24%)
No. of foreign employees	0 (48%)
Organization format	Division of a Japanese corporation (manufacturing/sales) (63%) Division of a Japanese corporation (manufacturing company) (21%)

Source) Survey on R&D of Foreign-Affiliated Companies in Japan

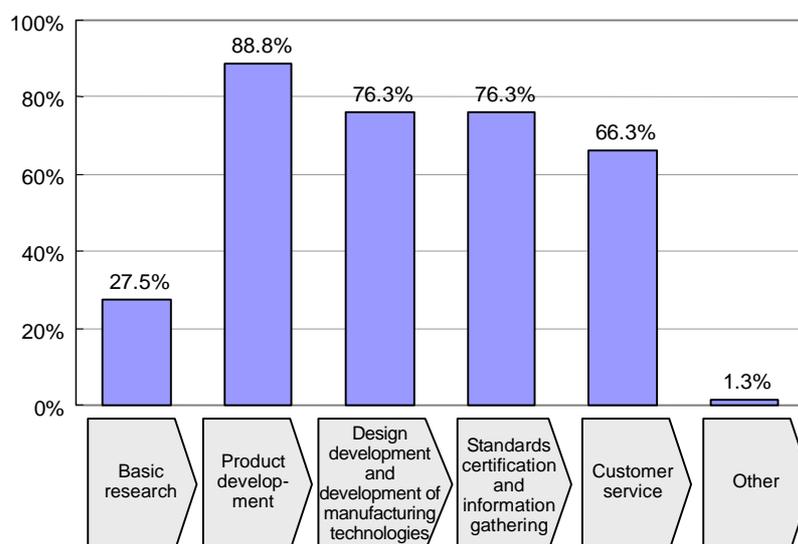
2.3 Nature of foreign company R&D activities

1) Mission of R&D in Japan

Nearly 90% of foreign companies conducting R&D in Japan gave “product development” as the mission for this R&D, with 76% of companies also aiming for design development, production technology, acquisition of standards certification, and information gathering. A relatively small percentage (28%) of companies is also engaged in basic research.

Looking more closely, the aims garnering response rates of higher than 50% were “products specifically for Japanese market” (58.8%), “development of product designs for Japanese market” (52.5%), “testing and technology assessment” (51.3%), “gathering of technical data” (51.3%), and “after-sales product support” (53.8%). R&D activities directly tied to business in the Japanese market are thus the most vigorously pursued.

Diagram S-4 Missions and roles by R&D value chain



Source) Survey on R&D of Foreign-Affiliated Companies in Japan

2) Reasons for conducting R&D in Japan

When asked the reasons for conducting R&D in Japan, a notably high 75.0% of companies gave “to strengthen development of products for the Japanese market”. Other leading responses were “to engage in R&D activities linked to Japan’s superior production engineering capabilities” (41.3%), “to make use of Japan’s superior research and intellectual achievements” (38.8%), and “to maintain and strengthen dealings with business partners (existing customers) in Japan” (37.5%).

The case studies revealed instances in the chemical and pharmaceutical industries, sectors boasting many R&D centers, of commercialization utilizing research results from Japanese universities and/or research results from venture companies in Japan. They also showed that the chemical, automotive, and IT industries are engaged in product development in connection with customers and users in Japan. One company explained that its worldwide R&D structure is determined by regional distribution (Americas, Europe, Asia, etc.), cost, and the availability for hire of high-caliber human resources.

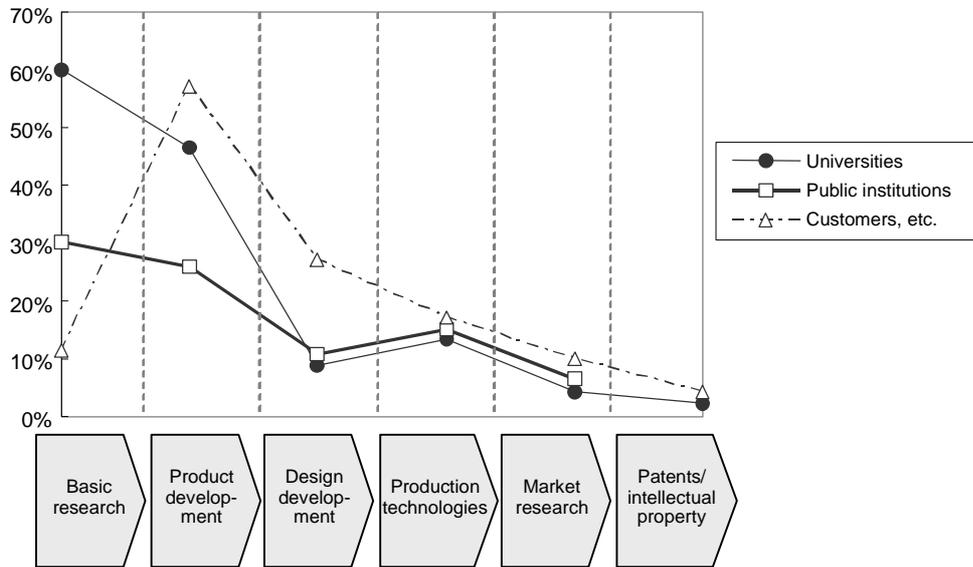
3) Cooperation with universities, etc.

In basic research, 60% of companies cooperate with universities and 30% with public research organizations. In addition to cooperation with client and user enterprises, almost 50% of companies noted cooperation in product development with universities, and nearly 30% with public research organizations.

In design development, however, cooperation with client and user enterprises is being pursued by about 30% of companies, and with universities and public research organizations by only about 10%. Cooperation with universities, public organizations and client and user enterprises in production technology, market research, patent/intellectual property management, etc., was lower across the board than for other functions.

Cooperation with external organizations in the area of basic research is particularly common among companies that established their R&D centers in 2000 or later.

Diagram S-5 Cooperation by R&D value chain



Source) Survey on R&D of Foreign-Affiliated Companies in Japan

3. Factors and issues in selecting sites for foreign company R&D centers

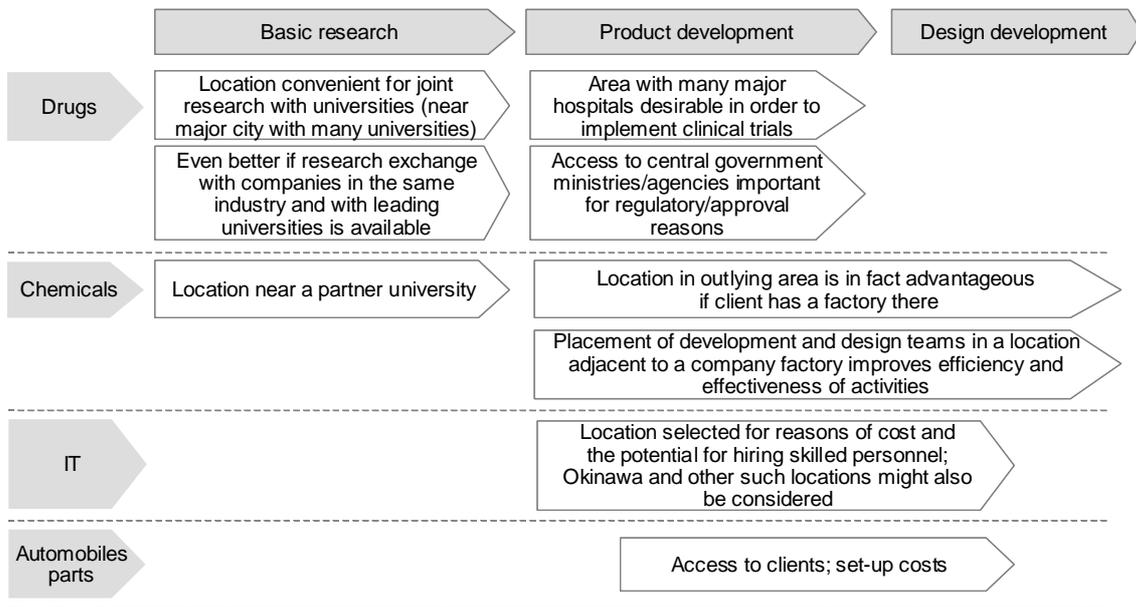
3.1 Factors in foreign company R&D site selection

The head offices in Japan of approximately 68% of foreign companies having R&D functions are concentrated in Tokyo. R&D centers, however, are more dispersed, with no more than about 15% situated in Tokyo. R&D centers are primarily situated in the Kanto region but outside Tokyo, although some are also situated in the Chugoku and Shikoku region.

The single most common reason cited for selecting present locations was “already the location of Japanese subsidiary” (47.5%) and “easily accessible from location of parent company” (27.5%). Although the head offices of foreign companies are concentrated in Tokyo, it appears that locations for R&D centers are selected on the basis of easy access from the head office and/or a favorable R&D environment (including operational costs).

The reasons indicated in the case studies for selecting particular locations were local government policies for attracting companies, the presence of industrial clusters featuring research institutes from the same industry sector, the provision of land by Japanese partners, the desire to set up R&D operations on the premises of a company factory, and the wish to set up R&D operations on the premises of a company sales location. In none of these cases does it appear that Tokyo was selected simply for the reason that it is the national capital.

Diagram S-6 Points emphasized in selecting sites



Source) Prepared using the results of interviews conducted for “Survey on R&D of Foreign-Affiliated Companies in Japan”

3.2 Issues confronting foreign company R&D

With regard to issues faced when conducting R&D in Japan, the single most common response was “difficulty of recruiting high-caliber human resources” (45.3%), followed by “communication with home country and other regions around the world” (43.8%). In addition to these two points, high land/office rental costs and other costs were pointed out in the case studies.

Foreign companies might also face many situations in which researchers will need to engage in direct negotiations and discussions with the overseas R&D headquarters, mandating that skilled personnel with strong communication skills in English be hired.

4. Present agglomeration of R&D centers overseas

4.1 The US

There is a tendency in the US for high-tech industrial clusters to be formed near universities and research institutes with high-caliber researchers on staff, as seen in Silicon Valley as well as San Diego, Pittsburgh, Austin, etc. More specifically, venture companies created by universities and research institutes have become core players in high-tech industrial clusters, and spinoffs and spinouts from these venture companies are driving rapid agglomeration of companies in these areas.

Global companies from Japan and Europe have also established locations to pursue joint research with universities and research institutes as well as business partnerships with high-tech venture

companies.

4.2 India

There is a strong tendency in India for private company R&D centers to concentrate in science parks established by the government. Among the reasons for this are efforts to improve infrastructure guaranteeing convenience for company activities and to enhance living environments via financing institutions and commercial facilities. Such locations are now being formed in Bangalore as well as Chennai, Hyderabad, and Noida.

4.3 South Korea

R&D functions in South Korea have generally been concentrated in Seoul, but excessive concentrations of population and industry, a lack of space for R&D functions and deterioration of research environments have become problematic. To relieve this overconcentration, the government has encouraged the selection of R&D sites to locations other than Seoul and the transfer of R&D functions to these sites. “Deodeok Valley” (Daejeon City) offers a typical example. As a result of this decentralization policy, agglomerations of R&D companies can now be seen not only in Seoul but also in Gyeonggi and the Daejeon area. Industrial clusters targeting the agglomeration of specialized industries (e.g., medical equipment) have also formed in local areas, among them the Wonju Medical Device Techno Valley.

4.4 Other cases

In Europe, efforts have been made to agglomerate the R&D centers of special industries on a project basis, as seen in the MINATECH Project in Grenoble, France, and the ALBA Project in Scotland (UK).

5. Suggestions on attracting foreign company R&D

5.1 Significance of attracting foreign company R&D

The list of management approaches to R&D was topped by “promotion of personnel exchanges with foreign research institutes” (39.1%), and “introduction of knowledge management globally to promote efficiency of R&D activities” (31.3%). It appears that the know-how accumulated overseas through personal exchange and knowledge management are making their way to Japan.

A particularly high 60.9% of companies credited their R&D activities with “successful product or design development for Japanese market and strong sales,” and it would seem that their R&D centers in Japan have achieved their missions to some degree.

On the utilization of R&D support organizations/companies in Japan, a significant 51.6% of companies reported “use made of public research organization, clinical trial service provider or

similar R&D support agency.” A clear ripple effect can be anticipated if these companies are located in smaller communities.

5.2 Future expansion of foreign company R&D activities

About 60% of companies responding to the questionnaire survey noted that they would move toward expanding the scale of their activities in terms of budget, research topics and personnel, while 3% said they would reduce or withdraw from their activities; the percentage of companies moving to expand their R&D operations in Japan is thus high overall. The more recently a company set up R&D facilities in Japan, the more likely it is to be considering expansion.

Given their anticipated market growth and relatively low operational costs, China and India emerged as other Asian countries under consideration for R&D facilities in the case studies and the exchange of views with experts, and it was repeatedly pointed out that these two countries could pose a threat to Japan’s position.

5.3 Suggestions for future efforts to attract foreign company R&D functions

In view of the actual circumstances surrounding foreign company R&D, the issues confronting R&D activities in Japan that came up in the interview survey, the intensification of competition with China, concerns about the hollowing-out of Japanese industry, and discussions at the exchange of views with experts, this section will summarize recommendations for attracting foreign company R&D functions in future.

5.3.1 Use of basic research seeds to attract R&D functions

The nature of R&D conducted by companies recently locating to Japan, collaboration with universities and public research organizations, and the points made by companies examined in the case studies all inspire high expectations for basic research in Japan. Foreign companies are seeking brilliant minds from around the world, and Japan offers sufficient potential in this regard. Focusing on this point and utilizing seeds for basic research within Japan can help attract R&D functions.

The Japanese market is forecast to shrink as its population declines, and costs remain higher than in neighboring Asian countries. R&D functions should be attracted to Japan not only by pointing out Japan’s appeal as a market, but also by utilizing seeds for basic and applied research.

An effective approach might be to combine inducement activities that make use of Japan’s potential in basic research at universities and public research organizations with support for industry-academia cooperative activities and efforts to establish a system for collaboration with foreign companies.

5.3.2 Use of opportunities for dealings with global companies to attract R&D functions

The requirement for R&D tailored to the needs of the Japanese market and Japanese customers remains high. R&D activities in Japan could also possibly serve as an entry point for Japanese

companies expanding globally. Firms seeking to deliver parts and materials to companies pursuing worldwide growth—be they in the automotive, construction machinery, office machinery, electric machinery, machine tool, or chemical industry—can satisfactorily carry out product development in Japan to develop business dealings with these companies.

To that end, efforts to point out the appeal of opportunities for business transactions with local companies and other Japanese companies could be expected to produce positive results and attract foreign companies. Bearing in mind transactions with customer companies, product development is envisioned as the primary function, but possibilities also exist in basic research and design development.

5.3.3 Inducement of R&D functions in areas near major cities and in provincial areas

The head offices of foreign companies tend to be found in Tokyo, but research facilities are not necessarily concentrated in the largest prefectures of major metropolitan areas; indeed, they tend to be located in surrounding or even outlying areas. A cheaper yen and a fall in land prices has decreased the costs of setting up operations, particularly in outlying areas, and proactive use of this fact could very well generate positive results in attracting companies.

Nevertheless, most important in such cases is stressing the accumulation of knowledge inherent in industrial clusters and the ways in which foreign companies can also make use of this.

Given that foreign companies do not necessarily compare local conditions throughout Japan when deciding on locations for their facilities, an effective approach might be to create a scheme that provides companies with information on suitable sites before they make their selections.

5.3.4 Enhancement of R&D infrastructure

An increasing number of foreign companies are expanding their R&D activities in China and India, heating up competition within Asia. This situation demands the effective implementation of pioneering R&D projects by national governments, the enhancement/strengthening of R&D support organizations, and the placement of personnel with strong English communication skills who are highly skilled as researchers and engineers.

Not only individual local governments but regions and even the country as a whole needs to establish the R&D environment that is highly attractive even in comparison with lower-cost Asian countries.

5.3.5 Formation of “innovation hotspots” in partnership with universities

Other countries are seeing industrial clusters being formed in specific areas that take advantage of the strengths of local industry, and foreign companies in relevant fields are setting up R&D centers in these areas and expanding their R&D activities in partnership with the area’s universities and research organizations.

To encourage foreign companies to establish R&D centers in Japan, regional policies are needed for conducting in-depth analyses on the technical seeds available at universities and research institutions and on industrial structure, taking a thorough inventory of each region's strengths industry-wise and, like other countries, forming industrial clusters centered on "innovation hotspots" that offer a concentration of functions. When creating innovation hotspots, it is important that a scheme be developed to promote collaboration with universities and research organizations and to facilitate the smooth transfer of superior technical seeds to foreign corporations and other companies setting up local operations.