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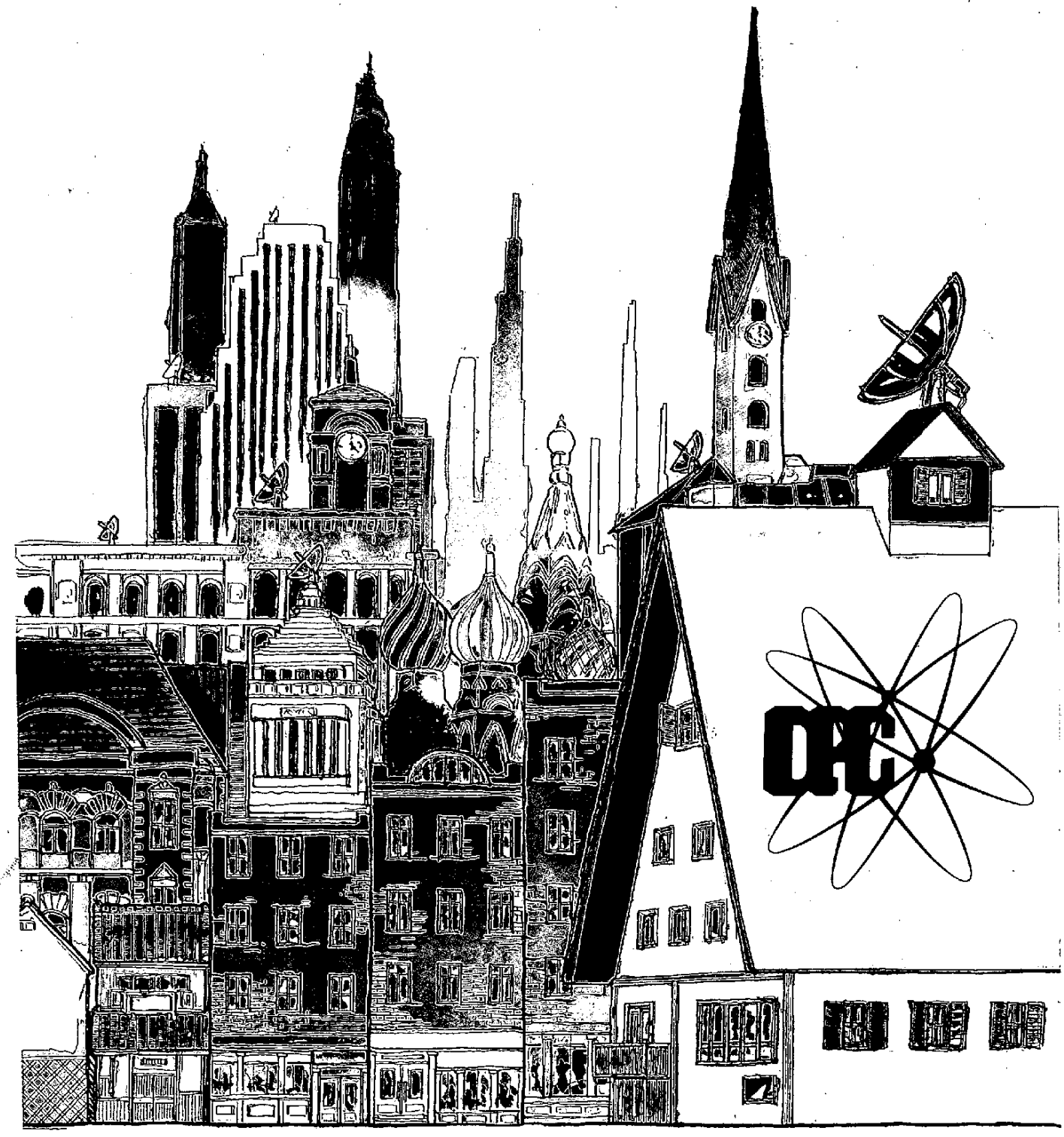
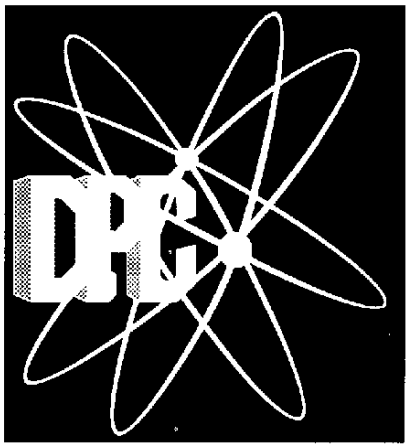
Database in Japan 1991



Database Promotion Center, Japan

Database Promotion Center, Japan (DPC) was established in 1984 with the information supplies, users and related industrial circles supervised by the government. DPC is a not-for-profit organization aimed at the promotion, research, production and dissemination of database services worldwide.

Database in Japan 1991



Database Promotion Center, Japan

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I. INTRODUCTION

1. Database Situation in 1990

We are in the last decade of the 20th century and our social and economic surroundings are undergoing violent changes, and we are groping for some new framework for them. The movement towards reorganization of some European countries which started with the upheaval in the Soviet Union and Eastern Europe, has brought about the end of the Cold War between the East and the West. This is a first and promising step towards the 21st century, in which the market unification of the EC is finally to be realized. On the other hand, we should not overlook some problems of instability, such as the irritated feelings of the people in the Soviet Union and Eastern Europe caused by the state of being at a standstill in the shift to market economies from planned economies, the ethnic independence movements in the three Baltic countries, the Gulf War, and the confused state of the Uruguay Round of GATT.

Under these international circumstances, the role of databases will become increasingly important in the future. In the fields of technology development, industrial performance and standard of living, it is necessary to get information quickly when needed, from an enormous amount. Thus, the development of a new and higher technology will be promoted, useless parts of industrial performance will be eliminated, and smoother operations will be introduced, which will, in turn, realize a higher standard of living.

Database services started in Japan in the beginning of the 1970s, and achieved remarkable growth in the 1980s. This rapid growth was brought about by Japan's transformation into one of the world's leading countries both economically and technologically, and as a result, the need for Japanese information has increased. Additionally, many years of government policy to promote the information industry should not be overlooked. In 1981, the Industrial Structure Council Information Section drew up "An Outlook of the Information Industry for the 1980s" and stressed the need of organizing and promoting our database services. In 1984, the Database Promotion Center, Japan (DPC), was established and has promoted Japanese database services by assisting and instructing in database production and distribution.

In accordance with the proposal by the Congressional Federation for the Promotion of Information Industry (Chairman: Diet Member Tadashi Kuranari), the "Database Reserve Fund" was established in 1987. Though this law had been in force only for two years, an extension was legislated in 1991. These efforts in various fields yield steady development of the Japanese database industry.

In July, 1990, the Ministry of International Trade and Industry (MITI) announced the "International Trade and Industrial Policy in the 1990s," in which they support ideals "Toward Creating Human Values in the Global Age" and propose contribution to the international economic society, maintaining industrial vitality. They also look at the problems of local areas and the standard of living, which has not been treated with sufficient political emphasis, and propose the following three policies:

(1) Promoting contribution to international society and reimbursement to the people
(2) Realizing a comfortable standard of living
(3) Building a foundation of long-term economic development

In the course of their strives to realize a highly advanced information society, the database information services will spread extensively, will continue developing every industry and common living standard, and will have a strong impact on the Japanese economy. Information infrastructure, such as databases and information network which are the core of advanced information society, is defined as one of the keys for "Building up a Long-term Economic Development Infrastructure."

With the above in mind, "Database in Japan 1991" introduces research and analysis with an emphasis on the following:

(1) Detailed analysis of database utilization by types of industries and sizes of companies
(2) Surveys and analysis using personal computer (PC) network service, of database utilization in daily life
(3) Analysis of local information service by compiling an index of database demand and supply in local areas and simultaneously introducing database production with local characteristics.

2. Database Problems and Outlook

2.1 Toward a New Stage of Development

The database industry in Japan continued developing in 1990 as remarkably as in the past. The sales of the database industry may be said to have increased steadily at an annual rate of about 17% for the past ten years, though exact figures cannot be given here because of an intermediate alteration in statistical classification.

As any industry makes their way through experiencing one stage after another to develop, the database industry seems to have passed its first stage of development. The next stage will definitely appear with substantial improvements, instead of an increase only in volume. In the age of a goods-based economy, technical renaissance gave an impetus to bring about a new stage of development. However, in the present age of a service-based economy, not only technical renaissance but also a change in the awareness and behavior patterns of consumers will influence the development of a new stage.

Today, the awareness and behavior of consumers can hardly catch up with very advanced technology, and this phenomenon can be noted clearly in the case of the information service, which may be called a typical feature of a service-based economy. The next stage of development in database service is being reviewed from both points of view, from the viewpoint of development of technology related to databases and from the viewpoint of changes in user awareness.

2.2 From Simple Information Service to Sophisticated Service

Database service is literally defined as a business to provide databases for searching and to charge usage fees. In other words, users pay for information. However, database service lately is adding a new phase, in which the merging of transaction services often are noted. Transaction services are online systems which conduct clerical work of reservation or ordering such as the Computerized Reservation System (CRS).

Though Japanese people have been regarded as not cost-conscious of information value and not having suitable circumstances for satisfactory development of information services, this merging of transaction services into existing database services will increase information distribution combined with actual clerical work and business performance, and thus the bottleneck in our cultural climate will be removed.

In an overpopulated country like Japan, sole information sales are often considered an incomplete service and are not easily accepted. Therefore, information services must be offered in a straightforward manner, saying "This is a service called database," including database services as a matter of course in the services of reservation and ordering, thus providing useful information will be most advisable, and then database services will be more easily accepted.

Paradoxically, as databases develop and spread, their existence proportionately becomes less visible.

2.3 Personal Databases Attract Attention

With the appearance of CD-ROM, personal memory storage of voluminous amounts has been realized. More advanced personal computers are making it possible for a single user to operate at satisfactory speed. The combination of personal computers and CD-ROM makes it possible for an individual to access private databases.

After the spread of hardware and software of personal computers, personal access to databases is likely to follow. This may be called "personal databases" and they will most naturally be distributed through existing publication distribution routes. Database publication as a new genre attracts attention together with a promising marketability.

PC network service includes not only communication among members, but also access to databases, and possession of interlocking systems for reserving and ordering commodities. As database utilization spreads, personal utilization of databases is most likely to increase rapidly.

It can be expected that databases will expand on a personal market beyond the current main utilization by organizations.

2.4 Great Potential of Spreading CD-ROM Publications

The above mentioned publication of CD-ROM type databases could offer an opportunity for most publications, which have so far had no direct relations with databases, to be established as databases, a new type of publication. A full text database is this type of database. Full text database services for magazines and newsletters have been offered through online services, but these services have been limited to the fields where the services have paid off. CD-ROM is similar to the existing printed publications in its production and distribution, and can be understood easily by publishers, as it is different from online services. Therefore, CD-ROM has a great potential of being applied to all types of publications and can at a rapid pace promote production of a full text database for publication.

As for the search technique, attention is focusing on Hypertext as a form of computer document search. Though this method has much room for easy-to-use technical improvement, it is expected to spread wide in the very near future, as a new type of editing and reading of documents.

In other words, the spreading of CD-ROM publication of the full text of books and magazines edited in Hypertext form can probably be seen shortly,.

2.5 Overseas Distribution of Databases and International Contribution

The international contribution made by Japan in the field of database services should be made by means of promoting overseas distribution of Japanese databases or Japanese information. This is the opposite of the case of general products, where we are being urged to increase import from abroad. In any case, our efforts to increase the export of Japanese information and the import of foreign products should be made for the purpose of contributing to international society, not only for gaining profits.

There is fear that private companies take too high risks when they actively promote overseas distribution of own databases.

It is also feared that Japanese databases may not sell as expected in the overseas market, and that the cost of translating databases into English are not covered sufficiently by overseas sales.

Additionally, most Japanese vendors are not yet confident enough in their basic know-how of overseas sales such as market research, contracts, and final payment to overseas agents. The risks involved in the exports of general products have been taken by commercial firms, so it is considered necessary that the entire database industry endeavor as one body to establish some form of organization which will engage exclusively in the overseas distribution of Japanese databases.

Most overseas demands for Japanese information may be considered as one of the steps

preceding the entry of overseas companies into the Japanese market, and these will lead to increasing our imports of foreign goods.

Taking these points into consideration, we should attempt to devise some kind of system in which the overseas distribution of Japanese databases can be interlocked with the imports of foreign goods, services and capital.

II. PRESENT STATE OF COMMERCIAL DATABASES IN JAPAN

1. Database Service Market Trends

1.1 A Highly Promising Industry

In the 1960s, the database service grew into an industry in the U.S. Accordingly, its history is short, and still there is no internationally coordinated database definition. The Organization for Economic Cooperation and Development (OECD) has started reviewing the international scene for breakthroughs on this point, and further, the DPC established the Database Statistics Committee in 1991.

The Copyright Act in Japan defines databases as "Aggregates of papers, numeral, graphics, and other information, formed in a manner to enable search using computers." Recently in America, database has been dubbed "Electronic information service" to cover a wide range of services, including real-time financial information (equities, commodities, foreign exchange), transaction service like Computerized Reservation System, (CRS) etc. and so forth.

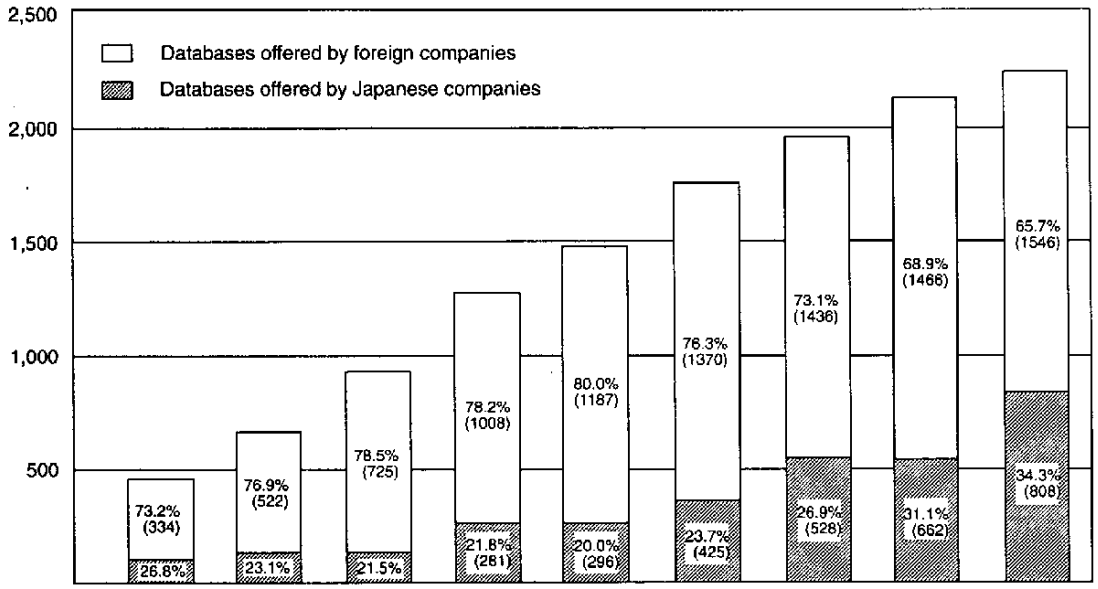
According to the MITI "Survey of Selected Service Industries," the total database service industry market value in Japan was ¥157.6 billion in 1989. This is only 3.6% of the total information service industry sales, which amounted to ¥4.4 trillion. The nominal GNP of the same year was ¥406.2 trillion. Accordingly, the information service industry as a whole accounts for only 1.07% of the GNP. In this way, the database service industry is still small, but the growth rate from the previous year was 48.3%, indicating that this is a highly promising industry, since its growth capacity is by far greater than the nominal GNP. The growth rate of the nominal GNP is 7.2%, and that of the information service industry is 32.0% (Table 2-1).

Table 2-1 Annual Sales by Various Sectors of Information Service

Classification	1988	1989		
	Annual Sales (¥100 million)	Annual Sales (¥100 million)	Ratio (%)	Increase from the previous year (%)
Database service	1,063	1,576	3.6	48.3
Software development and programming	17,991	25,125	57.7	39.7
Data processing service	6,351	7,452	17.1	17.3
Other information services	3,601	4,201	9.7	16.7
Others	3,967	5,160	11.9	30.1
Total	32,973	43,514	100	32.0
GNP (nominal)	3,789,630	4,062,449	–	7.2

Source: "Survey of Selected Service Industries," MITI, January, 1991

According to MITI's "Database Directory" issued in October, 1991, the number of databases available in Japan was as large as 2,354. Since the number of databases in 1982 when statistics were first taken was 456, this is equivalent to increase by 5.2 times over eight years, an annual average growth rate of 22.8%. However, most databases available in Japan are foreign, mainly by the U.S.-made. Particularly, in the first half of the 1980s, Japanese vendors imported positively superior foreign databases. As a result, foreign databases grew at a rate as high as annual 40% or more, reaching the 80% level in 1986 (Figure 2-1).



Fiscal Year	1982	1983	1984	1985	1986	1987	1988	1989	1990
Actual No. of Databases	456	679	924	1,289	1,483	1,795	1,964	2,128	2,354

Figure 2-1 Databases Accessible in Japan

Source: "Database Directory, " MITI

In the latter half of the 1980s, introduction of foreign databases leveled off (annual 7%), while the production of Japanese databases showed the high growth rate of an annual 30% in average. The Japanese database ratio exceeded the order of 30% for the first time in 1989. Such a remarkable growth of Japanese databases may be attributed to the effect of various policies concerning production of databases, such as the Database Reserve Fund, established in 1987. In terms of the utilization sum of users, Japanese databases occupy the highest amount. According to the "Survey of User Awareness of Database Services" conducted by the DPC in 1991, the ratio of annual utilization sum between Japanese and foreign databases is 77 to 23.

1.2 Comparison between Japanese and Foreign Databases

The distribution of commercial database in the ground total of Japanese and foreign ones by subject in 1990 shows that "Business" is ranked top by 38.1% (896 databases). This indicates a decrease by 3.3 points from 41.4% of the previous year. "Natural science and technology" which includes 738 databases shows an increase of 1.8 points from 29.6% to 31.4%. Contrary to these categories, "General" showed 621 databases, indicating an increase of 1.6 points from 24.8% of the previous year to 26.4%. The weight of "Social and human science" and "Others" is respectively 3.7% and 0.4%, figures nearly unchanged from the previous year . Distribution of commercial databases by subject is analyzed for each Japanese and foreign database (See Figures 2-2, 2-3, and 2-4). Japanese databases show high weight at 47.4% in terms of "Business". In particular, the three elements of economy, corporate finance and information, and finance, securities, and foreign exchange occupy 70.5% of the entire business field. The category "General" occupies the second place at 34.7%. This category, newspaper, magazines, and news show the highest increase; 78.7%, from 61 databases of the previous year to 109. In the small classification, this occupies shows the second highest percentage following corporate finance and information. "Science and technology" is extremely low at 14.6%.

For foreign databases, the weight of "Natural science and technology" is highest (620 databases), occupying 40.1% of the whole. This is equivalent to 5.3 times of the same category of Japanese database, which means that 84% of the databases of this category disseminated within Japan are foreign. Indeed, we have to rely on import in terms of databases though our science and technology, along with the economy, is positioned at the top of the world.

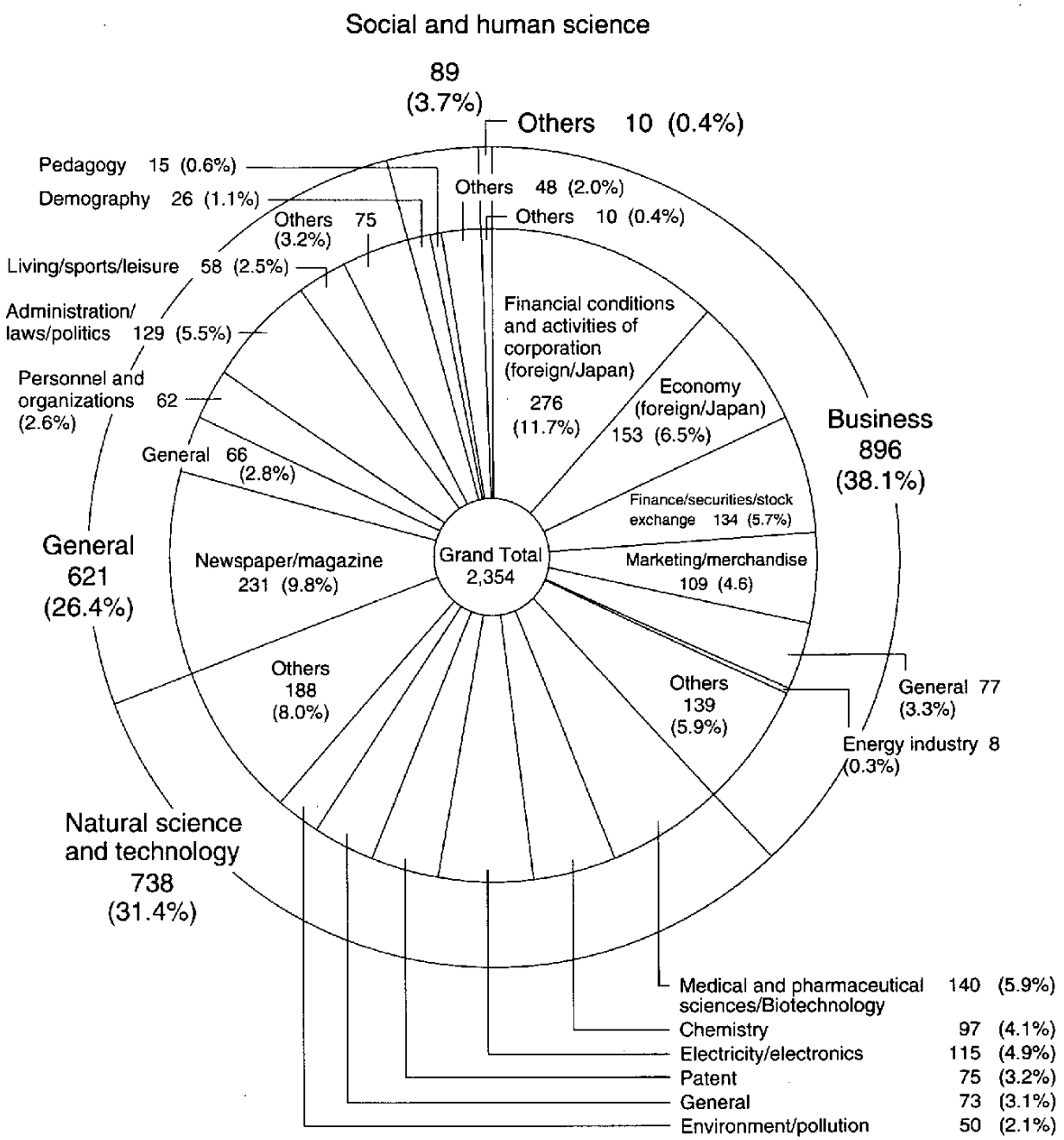


Figure 2-2 Distribution of Database by Subject

Source: "Database Directory, " MITI, 1991

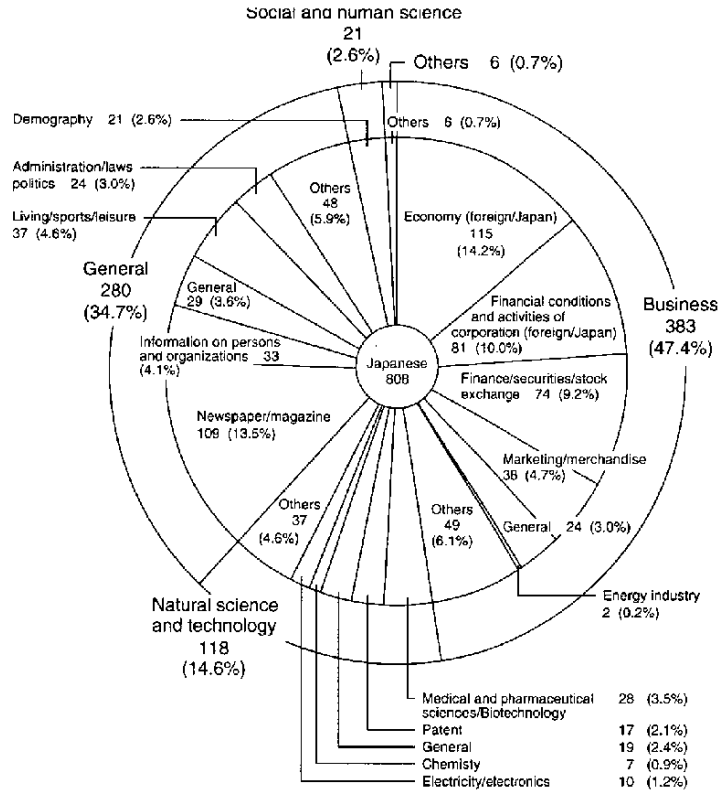


Figure 2-3 Distribution of Japanese Database by Subject

Source: "Database Directory, " MITI, 1991

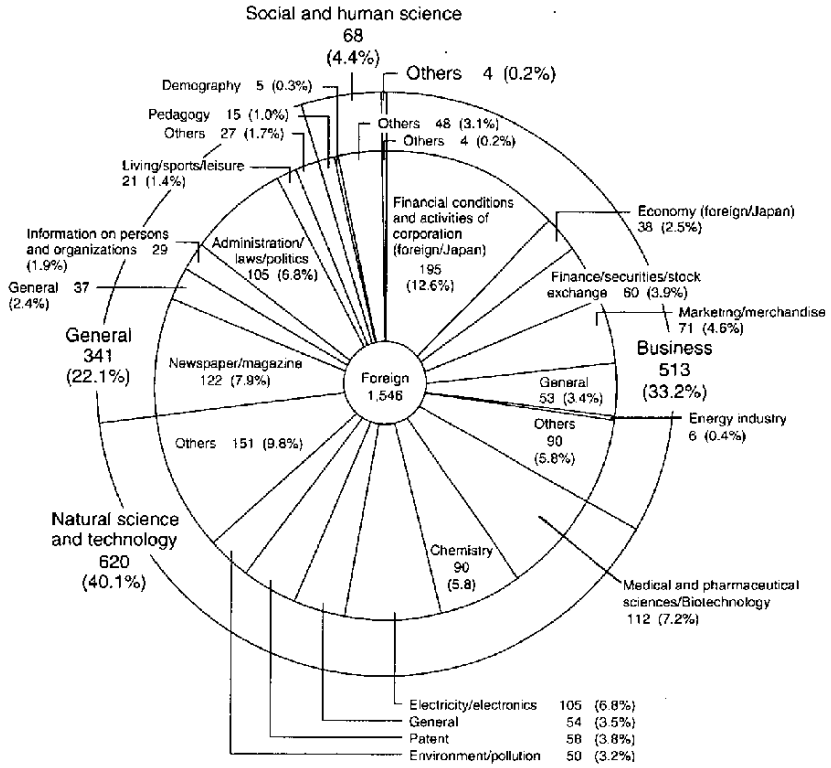


Figure 2-4 Distribution of Foreign Database by Subject

Source: "Database Directory, " MITI, 1991

1.3. Comparison between Japanese and the U.S. Databases

The database market of Japan is compared with that of the U.S., an advanced database country, in order to check the relative scale and characteristics. As described below, there are no internationally-coordinated statistics concerning the database. Though several indexes are set here for comparison, the readers should refer to them only as a comparison image because the definition and range may differ naturally in certain cases.

First, indexes to indicate the scale of the database industry are presented, including (1) No. of entry companies, (2) No. of producers, (3) No. of databases, (4) No. of passwords of distributor, and (5) Sales amount. Then, a comparison is made in terms of indexes to indicate database characteristics, such as (6) No. of Japanese databases, (7) No. of business databases, and (8) No. of fact databases.

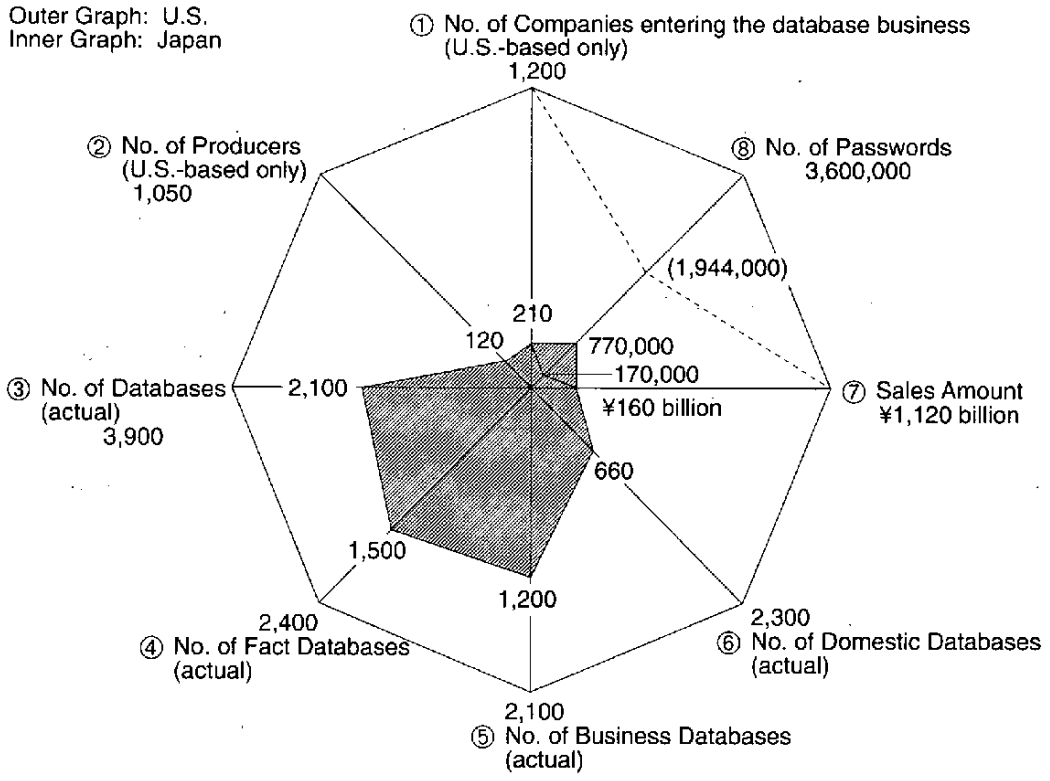
There is a considerable gap in the industry scale between Japan and the U.S. (See Figure 2-5). The Directory of Online Databases (Cuadra/Elsevier, January, 1990) includes registration of about 2,500 producers, distributors, and gateway companies. The U.S. based companies among them are 1,200 while the number of Japanese companies entering into the database service is 210, according to the 1990 Database Directory. In other words, the U.S.-based companies are as many as 5.7 times of the Japanese companies.

This difference becomes much larger when related to the number of producers only. The producers are located in the most upstream position of the database distribution mechanism and function as a barometer to indicate the basic capacity of the database industry. Among producers registered in Cuadra/Elsevier, the number of U.S. companies runs up to 1,050. Besides, 77% of these companies are dedicated to the function of producer.

On the other hand, the number of producers in Japan is 120, among which only 25 are dedicated to being producers. The U.S. is 8.8 times as large as Japan, as far as the number of producers is concerned.

As regards the number of available databases, there is not much difference between Japan and the U.S. This may be considered natural because most of the U.S. databases can be accessed through the international telecommunication line from Japan.

Now, we will compare market size, using the number of passwords issued from distributors to users. The number of passwords issued by distributors as of January, 1990 in the U.S. was 3.57 million (according to the IDP Report). This includes the number of PC network service terminals with large-size private users, videotex, and CRS installed in travel agencies. The number of passwords excluding the above number of terminals is 1.94 million. In Japan, the number of passwords is 170,000 (according to Nikkei New Media, July 30, 1990), which, however, does not include terminals of PC network service and videotex. If the estimated number of subscribers for PC network service and videotex of respectively 500,000 and 100,000 is added, the gross total of Japan amounts to 770,000. On the basis of the above number, the U.S. is 4.7 times that of Japan in the gross total and 11.4 times in the number excluding the PC network service.



Sources: ① ~ ⑥ for the U.S. "Directory of Online Databases", Cuadra/Elsevier, Jan. 1990.
Companies selected were U.S.-based while the number of databases was actual.
① ~ ⑥ for Japan "Database Directory," MITI, 1990
⑦ Estimated from the data obtained from LINK Resources Corp. for the U.S. and "Survey of Selected Services Industries," MITI, 1991 for Japan at the rate of ¥130/US$.
⑧ for the U.S. "Nikkei New Media," Nikkei BP, Nov. 2, 1990. The numeral in parentheses shows the number less the PC network service, Videotex and CRS.
⑧ for Japan "Nikkei New Media," Nikkei BP, July 30, 1990 The numeral of "770,000" is the estimate including subscribers for the PC network services and Videotex.

Figure 2-5 Comparison between Japanese and the U.S. Databases (1989)

According to LINK Resources Corp. concerning the sales of databases, the annual sales of databases in the U.S. is $8.6 billion (¥1,120.0 billion when converted at a ¥130 rate) in 1989. In the case of Japan, the "Survey of Selected Service Industries" of Japan shows about ¥160.0 billion), which means that the U.S. size is about 7 times as large.

Among the characteristics of databases, the number of U.S. databases is overwhelmingly large, possibly due to its long history. As compared with 2,300 U.S. databases available in the U.S. according to the directory Cuadra/Elsevier, the number of Japanese databases runs up to only 660 according to the Database Directory. In other words, the U.S. databases are 3.5 times as many as the Japanese ones. Database development is proceeding from science and technology field to the business field, while configuration goes from reference-type to fact-type databases. Accordingly, the amount of databases in the business field and of the fact-type helps determining the current development stage of databases. In view of availability of foreign databases (mainly by U.S.-made) in Japan, there is not much difference between Japan and the U.S., that is, 1.8 times and 1.6 times respectively.

2. Trends of Database Service Industry

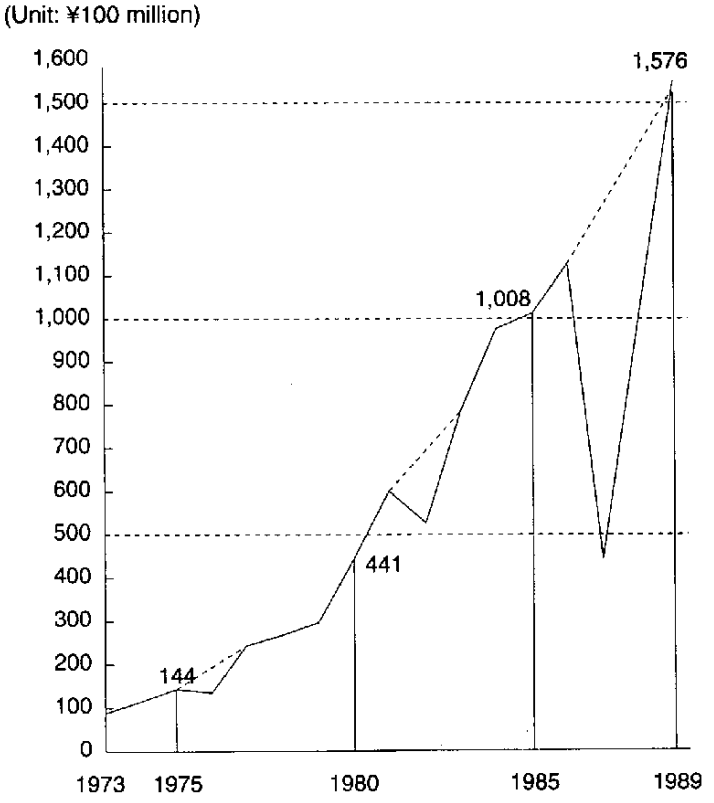
2.1 Turning point in 1985

The environment surrounding databases in Japan showed an extreme upsurge in 1985. Superficial phenomena observed were various policies and proposal concerning databases including a new communication system. Quantitative analysis of the database market trends also highlights 1985 as a time of certain importance.

After all, it may be said that the databases in Japan faced a turning point in or around 1985.

The first indication is the number of databases available in Japan. The actual number of databases exceeded 1,000 for the first time in 1985 (See Figure 2-1 of "Databases Accessible in Japan").

The second is the annual sales of database services. Namely, it was in 1985 that the sales exceeded ¥100 billion (Figure 2-6).



(Unit: ¥100 million)

1973	1974	1975	1976	1977	1978	1979	1980	1981
76	130	144	121	238	271	316	441	607

1982	1983	1984	1985	1986	1987	1988	1989
523	787	967	1,008	1,143	432	1,063	1,576

Figure 2-6 Transition of Annual Sales of Database Industry

Note) The business classification was partially revised in 1987 and the "information supply service" was renamed "database service".

Source: "Survey of Selected Service Industries," MITI

The third is the ratio of databases in the business field. In terms of the value modified by adding personal and agency information or newspaper and news information, the ratio of database in the business field exceeded 50% for the first time in 1986.

Fourthly, the ratio of fact-type databases exceeded 50% in 1986. As examples of the U.S. and Europe show, the business field and fact-type databases tend to become mainstream along with the evolution of databases. In this sense, the ratio of business/fact-type databases indicates the maturity of the database service.

The fifth is the number of business entries in the database service. It was in 1985 that the number of registered companies of the "Database Directory" exceeded the order of 100 (Figure 2-7).

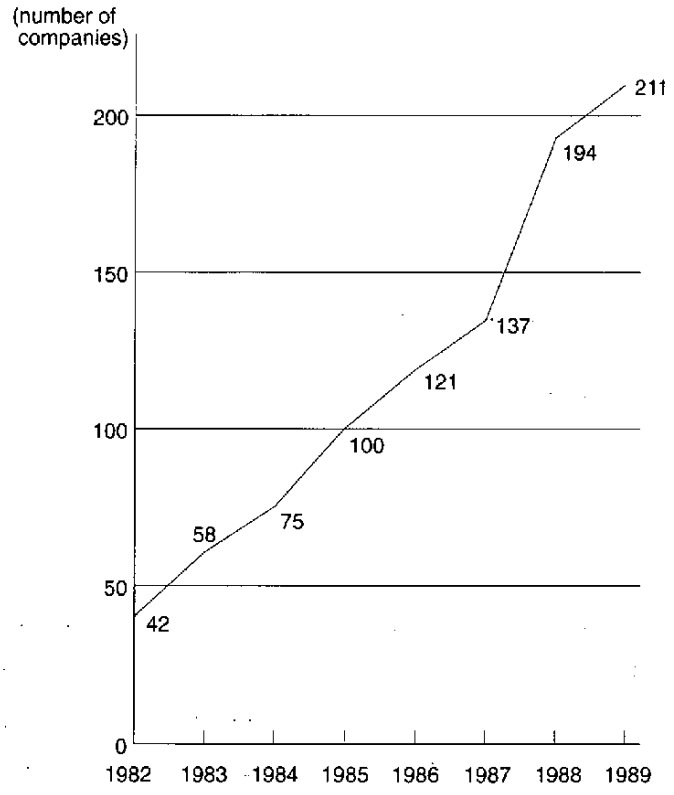


Figure 2-7 Transition of Companies Registered in Database Directory

Source: "Database Directory, " MITI

The sixth is the time of entry into the database industry. According to the "Survey of User Awareness of Database Services – Vendors" by DPC, the number of entries reached a peak during the period from 1985 to 1988 (See Figure 2-8).

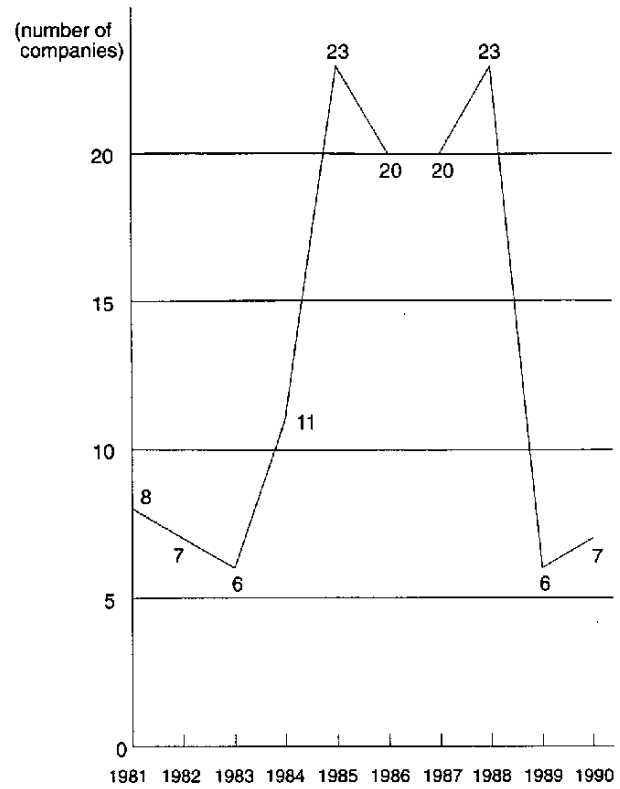


Figure 2-8 Annual Entries into Database Services

Note 1) The number of entries here means the number (including the case where one company makes multiple entries) of entries for the year concerned in certain business types (including specialized and side-line businesses).
Note 2) The total number of entries before 1980 was 35.
Source: "Survey of User Awareness of Database Services - Vendors," DPC

Seventh, in-house database production was most active in 1985. According to the "Survey of User Awareness of Database Services" (1990 edition), 157 in-house databases, 13.6% of the whole, were produced in 1985, which is the highest percentage per single year (See Figure 2-9).

The eighth point is that the policies, proposals, and reports were presented successively for promotion of databases in and around 1985. This fact supports the rising interest in databases.

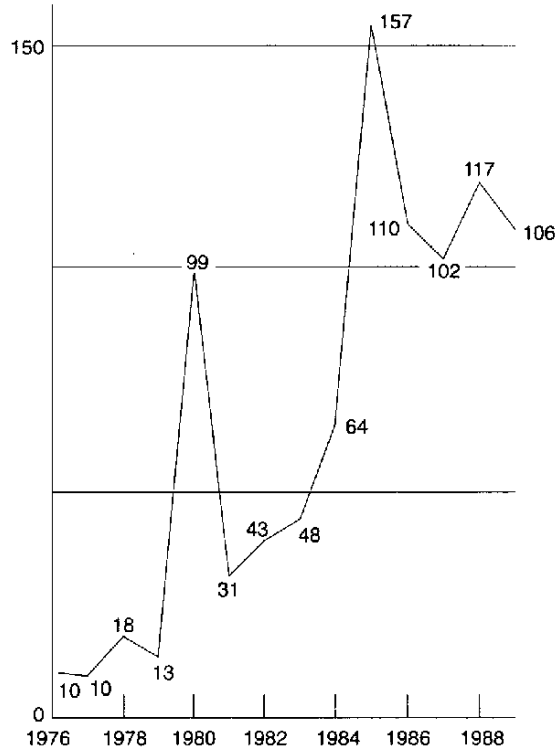


Figure 2-9 Transition of In-house Databases for Production

Note) The number of production databases was 151 before 1975 and 84 in 1990.
Source: "Survey of User Awareness of Database Services" DPC

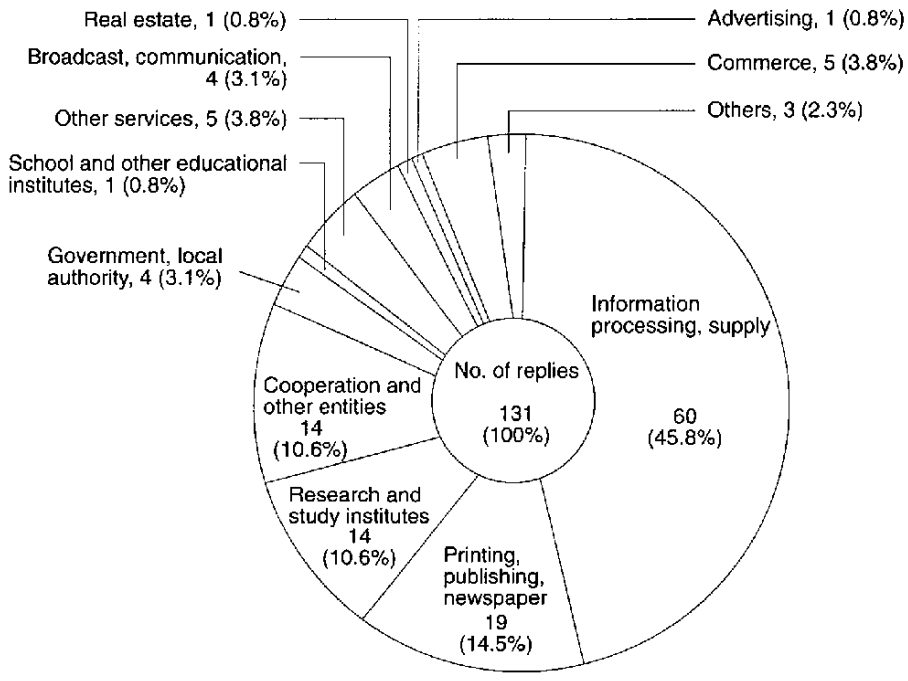


Figure 2-10 Business Type of Replying Companies

Source: "Survey of User Awareness of Database Services - Vendors," DPC, March 1991

2.2 About 60% of Database Company Position Potencial Industry in Future

DPC sent a questionnaire to 234 database vendor companies and obtained reply from 131 of them (recovery rate 56%). According to the "Survey of User Awareness of Database Services – Vendors" (hereinafter called "Survey, Vendors") executed by the DPC in September, 1990, the number of entry companies of the database industry in Japan is largest (46%) in the information processing and supply, followed by the printing, publishing, and newspaper industry at 15%, and research and study institute (11%) (See Figure 2-10). Conventionally, the database business of these companies have been undertaken by a part of the company, which has been one of factors hampering evolution as an independent business. In the survey made this time, 41% of the companies whose major line of business is other than the database service has positioned database business as their main business. Moreover, 57% consider this as promising. It is, therefore, expected that this industry will be further improved and expanded in the future (Figure 2-11).

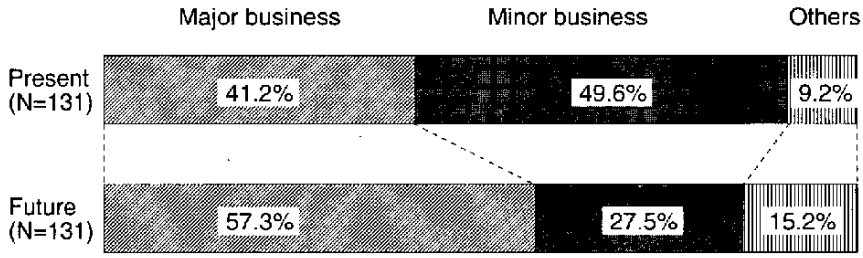


Figure 2-11 Positioning of Database Service

Source: "Survey of User Awareness of Database Services - Vendors," DPC, March 1991

2.3 Premature Sideline Industry

As sales limited to database are difficult to understand, positioning of database service as an industry is attempted using following four indexes of the "Survey, Vendor":

(1) Ratio of database sales of the company's gross sales
(2) Predicated growth rate of database sales (annual average growth for the coming five years)
(3) Ratio of Japanese databases in the database sales
(4) Ratio of the online service sales in the database sales

The first index, that is, the ratio of database sales in the gross sales, shows the highest percentage of 24.7% for the range of 1 - 5%, followed by 18.5% for less than 1%, 13.6% for the range of 5 - 10%, 12.3% for the range of 10 - 15%, and 11.8% for 90% or more. The average percentage of replying companies (81) is 23%. Companies with a database sales percentage of 50% or more, who can be ranked as dedicated database vendors, are as few as 21% of the total (Figure 2-12). In this way, the database industry in Japan is still at a stage of a premature sidelining along with another industry divisions.

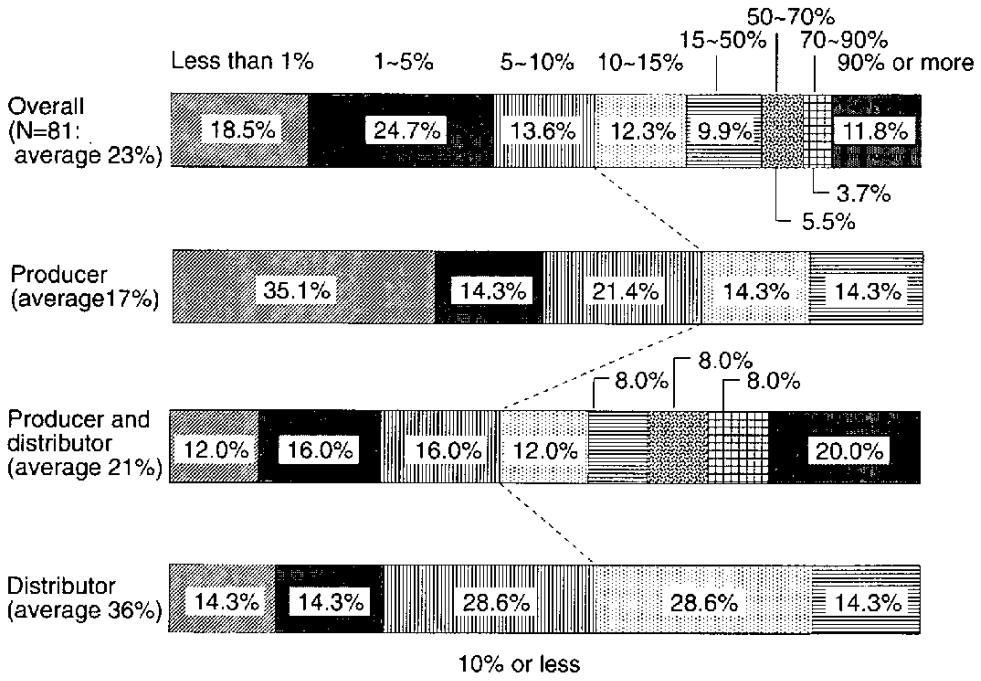


Figure 2-12 Distribution of Database Sales Ratio for Gross Sales

Source: "Survey of User Awareness of Database Services - Vendors," DPC, March 1991

On the other hand, the second index, which is the annual average growth rate of the database sales assumed for the coming five years, is said to be 18.6% in average for the replying companies. This is far below the 32.3% of the previous survey, reflecting depression in the financial market (See Figure 2-13).

The third index, or the ratio of Japanese databases in database sales, is high at an average of 87% of the total. Since the previous survey, and the one before that, showed ratio of 84% and 83% respectively, the sales ratio of Japanese database is moving upward. This index represents a good correspondence with the ratio of Japanese and foreign databases available in Japan. In other words, dependence on foreign databases is high (69% for foreign databases and 31% for Japanese) as long as quantity is concerned. But Japanese databases occupy an overwhelming percentage in terms of sales (utilization of databases) (See Figure 2-14).

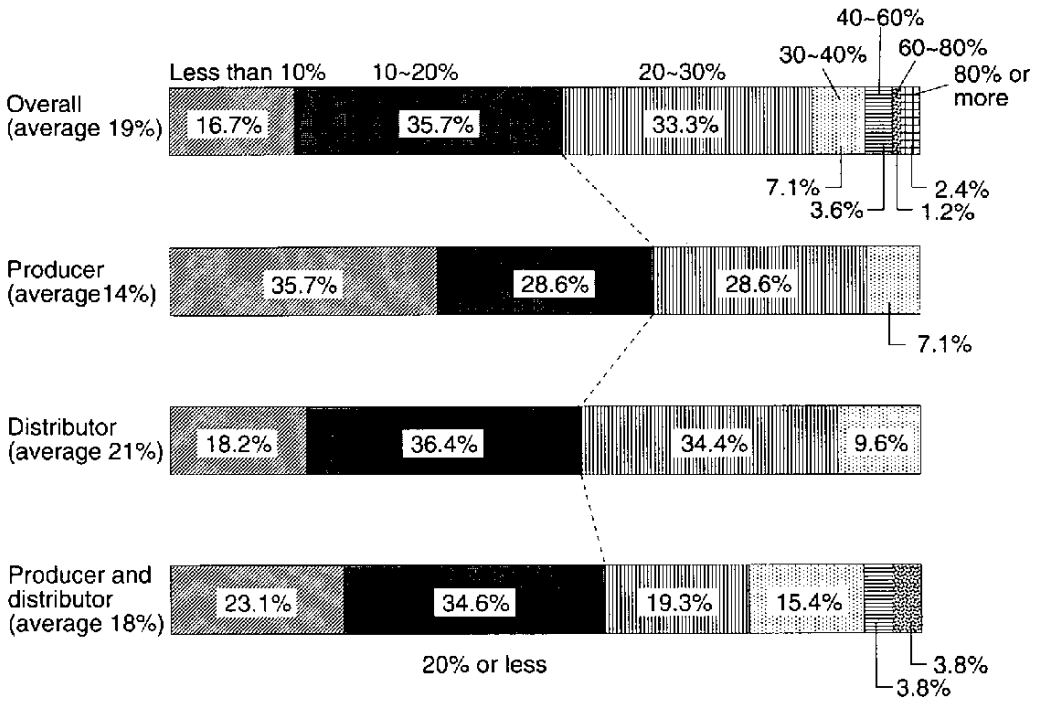


Figure 2-13 Expected Average Growth Rate Distribution of Database Sales for the Coming Five Years

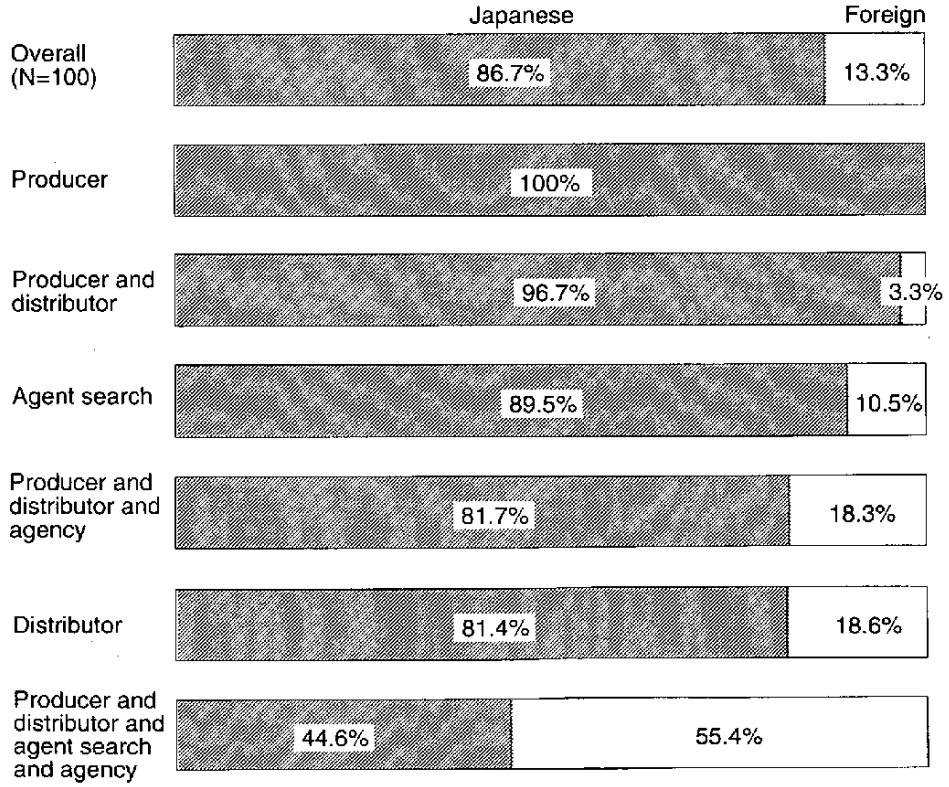


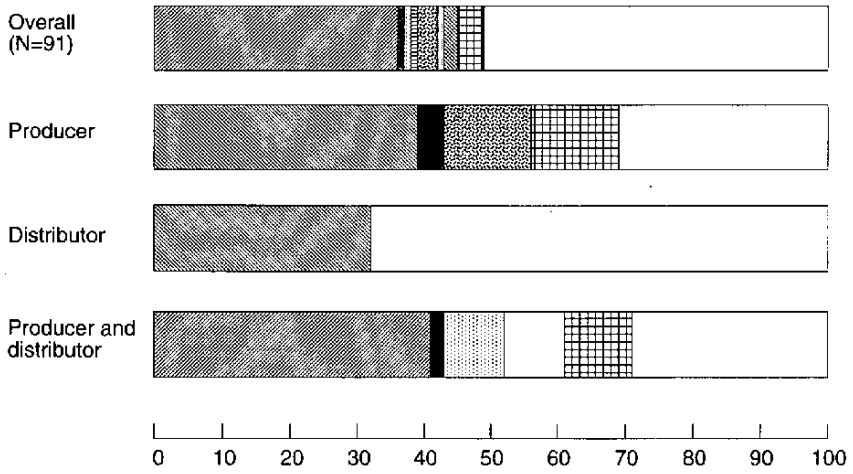
Figure 2-14 Ratio of Japanese Databases in Database Sales

Note) Analyzed for five or more replies

Source: "Survey of User Awareness of Database Services - Vendors," DPC, March 1991

Finally, according to the fourth index or online sales ratio of database sales, both Japanese and foreign databases prove that the online sales are mainstream (Figure 2-15).

(1) Japanese database



(2) Foreign database

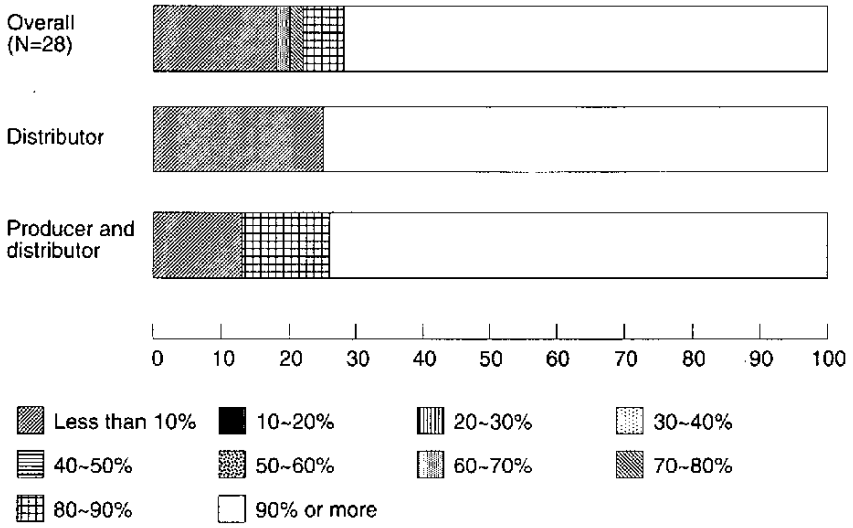


Figure 2-15 Distribution of Online Database Sales Ratio in the Database Sales

Source: "Survey of User Awareness of Database Services - Vendors," DPC, March 1991

2.4 Ratio of Database Production Cost

Rough classification of database production cost include (1) costs related to database production, including data collection, analysis, processing, and input, (2) costs related to development of software, including system design, program development, etc., and (3) Others (computer fees, etc.).

According to 62 replying companies, costs related to production of databases occupy 52% of the total. When viewed in terms of costs, the largest percentage (24%) is for the data input costs, followed by 20% for computer fees, and 14% for data analysis and processing costs. This cost ratio has not changed much over years (Figure 2-16).

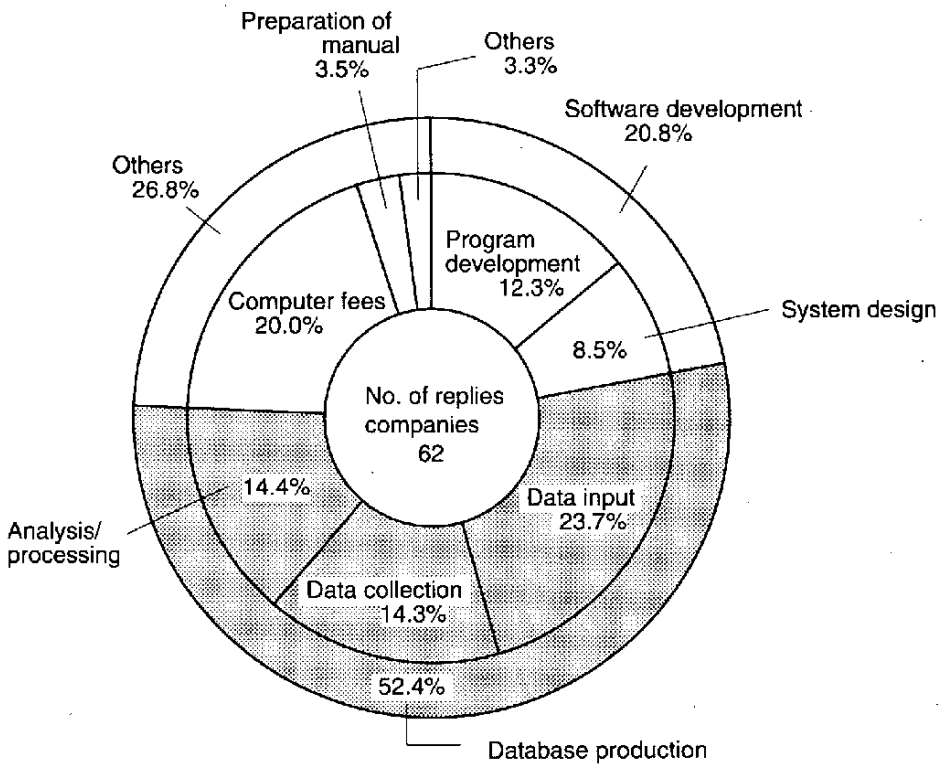


Figure 2-16 Component Ratio of Database Production Cost

Source: "Survey of User Awareness of Database Services - Vendors," DPC, March 1991

2.5 Problems with Database Production

Problems that producers face during production of databases naturally include factors related to costs. The biggest problem factor (81%) among replying companies is "Costs and time required for production including data collection and entry". The other two factors are "Burden of maintenance cost" (57%) and "High initial investment costs and difficulties with of recovery" (44%). Apart from the above, "shortage" of software, talent, standardization, and subsidy is also pointed out as a problem factor. (See Figure 2-17).

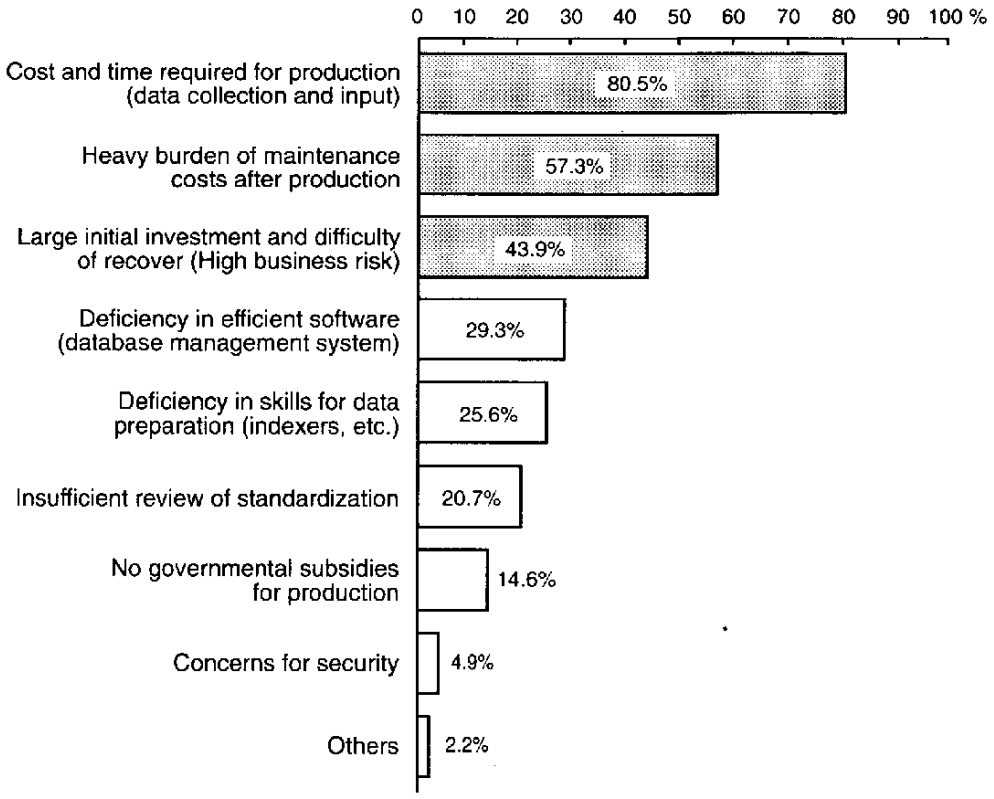


Figure 2-17 Problems with Database Production (N=85, Multiple Replies)

Source: "Survey of User Awareness of Database Services – Vendors, " DPC, March 1991

2.6 Distribution Method

Let us see how the producer distributes the databases. Here, we will see whether the distributor sells the database himself or entrusts sales to another company (distributor), not the media used for distribution.

Among 85 replying companies, 64 (75%) supply databases by themselves. This fact supports a strong trend of Japanese producers to prepare and sell databases by themselves.

On the other hand, 19% of the companies supply databases to another company for distribution from there to end users. Some producers (31%) supply database to two or more other companies for subsequent distribution. This situation shows that producers have helped in expanding the pattern of database supply (See Table 2-2).

Table 2-2 Database Distribution Method (N=87, Multiple Replies)

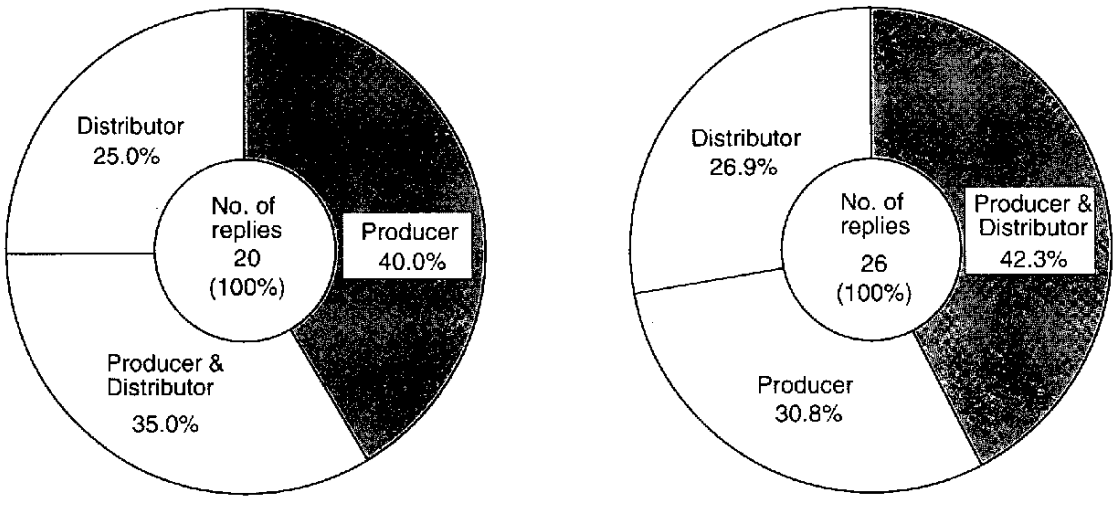
	No. of databases	Percentage
Self-service	64	75.3%
Database supply to another company	16	18.8
Database supply to two or more companies	26	30.6

Source: "Survey of User Awareness of Database Services – Vendors, " DPC, March 1991

2.7 Situation of Overseas Supply

(1) Overseas supply and business condition

Among 102 replying companies, 21% supply databases to foreign countries through certain business conditions. They supply as a producer (40%) and as a producer and distributor (35%). In the future, 26% of the companies are planning overseas supply. In this case, they supply mostly as a producer and distributor (42%), followed by 31% as a producer (Figure 2-18).



(1) Foreign service state (2) Position of Foreign service

Figure 2-18 Foreign Database Supply and Position

Source:"Survey of User Awareness of Database Services – Vendors, " DPC, March 1991

(2) Subject and area covered by database to be supplied

Concerning the database subjects to be supplied to foreign countries, 29 replying companies (with multiple repliants) pointed out the business field (85 replaints), followed by the general field (61). On the other hand, 26 and 8 repliants respectively answered that natural/science and social/cultural science fields should be supplied. In more detail, the top three subjects to be supplied include company finance/company information (18 replies), newspaper, magazine, and news (16 replies), and market and commodities information (13 replies). The areas to be covered include the U.S. (61 replies), followed by the EC and Asia, respectively at 49 replies.

(3) Problem factors for overseas supply

Problem with overseas supply of databases include difficulty of understanding the needs (59.5%) and high translation costs (54.8%), which are the two principal points commended by more than half of the replying companies. They also consider the sales network or operation system as a source of their problems.

2.8 Handling of CD-ROM

(1) Supply

Among 102 replying companies, only 20 (19.6%) supply database in the form of CD-ROM.

(2) CD-ROM database

At present, 20 replying companies supply 34 databases in the form of CD-ROM. Available subjects are overwhelmingly related to business (20 replies). On the other hand, a field planned for future expansion is the general field, which includes 21 databases, which makes it nearly equal to the business field. It is, therefore, necessary to improve and expand the quantity and application of CD-ROM databases (See Table 2-3).

2.9 Future Problems

As problems for future database service, "Developing skills" was pointed out by most of the companies (60.3%). Apart from the above, significant problem factors may be arranged in the order of "Value of information supply not acknowledged" (57.1%), "Reduction of production cost" (51.6%), "Reduction of operation cost" (46%), "Definition of copyright" (40.5%), "Standardization and integration of technologies" (33.3%), "Disclosure and distribution of government-owned data" (25.4%), "Subsidy and support such as tax incentives, etc." (21.4%), and "Security" (18.3%).

Table 2-3 CD-ROM Database Supply State and Schedule

	Supplying (N=20)	Scheduled in future (N=28)
[General]	8	21
Service guide and guide information	1	1
Dictionary/encyclopedia/directory	1	4
CAI	—	1
Magazine/document, publishing information	2	6
Who's Who	1	4
Newspaper/magazine/news	3	5
[Business]	20	21
Finance/securities/exchange/market information	—	1
Standards	3	1
Business/finance information	3	2
Economy/business	3	3
Commodities/products information	4	2
Parts catalog	1	1
Maps/mapping/phone No./address code	1	4
Statistics/population	3	4
Laws/codes/judicial precedents/tax/and tax administration	2	3
[Natural science/technology]	6	12
Medical/medicine/bio/chemistry	3	4
Meteorology/weather	—	2
Science and technology/patent	1	2
Computer/software	—	1
Mathematics/agriculture and agricultural science	—	1
Material/raw material	2	2
[Social and cultural scienc]	0	3
Education/religion	—	1
Language/terminology	—	1
Maps/geography	—	1
Others	—	3
Total	34	60

Source: "Survey of User Awareness of Database Services – Vendors, " DPC, March 1991

III. THE STATE OF DATABASE UTILIZATION

1. Present Utilization State

1.1 Widening Utilization Gap among Company Size

According to the "Survey of User Awareness of Database Services," which the DPC publishes every year, 483 (67.6%) of 714 companies which replied to the 1991 survey utilize databases. When viewing by company size, small and medium-size companies occupy 58.8% while large companies stand for 69.1%, showing a gap of about 10% (Table 3-1). (Note: See Table 3-2 for company size by the Small and Medium-size Companies Basic Law.)

Table 3-1 Outline of Replying Companies

		No. of replies (%)	Using Number	Using %	Not using Number	Not using %
By size	Small and medium-size companies	97 (13.6)	57	58.8	40	41.2
	Large companies	463 (64.8)	320	69.1	143	30.9
	Public services	154 (21.6)	106	68.8	48	31.2
By industry type	Construction	38 (5.3)	29	76.3	9	23.7
	Petroleum and chemical	81 (11.3)	75	92.6	6	7.4
	Iron and steel, non-ferrous, metal	30 (4.2)	17	56.7	13	43.3
	Electric, transport, machinery, manufacturer	63 (8.8)	52	82.5	11	17.5
	Other manufacturers	87 (12.2)	59	67.8	28	32.2
	Commerce	37 (5.2)	14	37.8	23	62.2
	Finance, insurance	33 (4.6)	22	66.7	11	33.3
	Information processing and supply	107 (15.0)	56	52.3	51	47.7
	Other office services	77 (10.8)	48	62.3	29	37.7
	Public services	144 (20.2)	100	69.4	44	30.6
	Others	17 (2.4)	11	64.7	6	35.3
By region	Metropolitan area	440 (61.6)	303	68.9	137	31.1
	Others	274 (38.4)	180	65.7	94	34.3
Total		714	483	67.6	231	32.4

Note: ( ): Percentage composition by size, industry, and region
Source: "Survey of User Awareness of Database Services," DPC, March 1991

Table 3-2 Standard Classification of Company Size Based on the Number of Employees

Industry Type	Small / Medium-size	Large	Public Service
Mining, manufacture, transport, and others (Construction, medical, electric, chemical, and metal industries)	Less than 300	More than 301	
Retail and service industries (Finance, securities, insurance, real estate, electric, gas, and information processing services)	Less than 50	More than 51	
Wholesales	Less than 100	More than 101	
Public service (schools and other educational institutes, research and study facilities, cooperations and other entities, government and local authorities)			

Note: The standard classification is to be the number of employees according to the Small and Medium-size Companies Basic Law.

Source: "Survey of User Awareness of Database Services," DPC, March 1991

The annual average sum of utilization per company for 1989 was ¥3.02 million for small and medium-size companies, and ¥46.48 million for large companies. Evidently, large companies utilize databases 15 times as much as small and medium-size ones. The expected growth rate for 1990 of the annual average sum of utilization also shows a gap of 3.6 point, that is, an 11.4% increase for large companies, to be compared with a 7.8% increase for small and medium-size companies. Consequently, the gap between small and medium-size companies and large companies is growing, as can be viewed in the database utilization sum (Table 3-3).

Table 3-3 Annual Average Utilization Cost by Company Size

(Unit: ¥10,000)

	Japanese database (N_1 =395)		Foreign database (N_2 =227)		Total (N_3=399)	
	Actual result of 1989 (ratio)	Scheduled for 1990 (growth rate)	Actual result of 1989 (ratio)	Scheduled for 1990 (growth rate)	Actual result of 1989 (ratio)	Scheduled for 1990 (growth rate)
Small /Medium-size companies	240.4 (68.0)	265.3 (10.4)	113.0 (32.0)	103.8 (−8.1)	302.4	326.1 (7.8)
Large companies	3,607.8 (66.6)	4,058.1 (12.5)	1,811.5 (33.4)	1,932.9 (6.7)	4,647.9	5,176.1 (11.4)
Public services	200.7 (59.9)	223.5 (11.4)	134.4 (40.1)	132.7 (−1.3)	263.7	293.6 (11.3)
Average	2,517.2 (65.8)	2,810.5 (11.7)	1,306.4 (34.2)	1,338.9 (2.5)	3,235.2	3,572.7 (10.4)

Note: Parenthesized ratios show the gap between Japanese and foreign databases.
The value of all columns does not become (Japanese average utilization sum x the number of users of Japanese databases (N_1) + foreign average utilization sum x the number of users of foreign databases (N_2)) / the number of all replying companies (N_1+N_2) x 100, due to the following reasons:
① The same companies utilize both Japanese and foreign databases.
② Companies which do not discriminately use Japanese or foreign databases are also counted in the total. Note that N = number of replying companies.

Source: "Survey of User Awareness of Database Services," DPC, March 1991

Figure 3-1 gives a more detailed picture of the situation of database utilization. In the sum range of ¥1-2 million small and medium-size companies show the highest percentage rate, 24.5%, followed by 20.4% for the range of ¥2-5 million. More than 40% of all small and medium-size companies utilization falls into a sum range of less than ¥1 million (less than ¥100,000 per month), indicating that utilization by these companies is still very limited. On the other hand, the utilization distribution among large companies varies greatly within the category. The sum range of ¥2-5 million occupies the highest percentage rate, 17.8%. Database utilization exceeding average holds 15.2%, while utilization at sums lower than ¥1 million is as high as 24.0%.

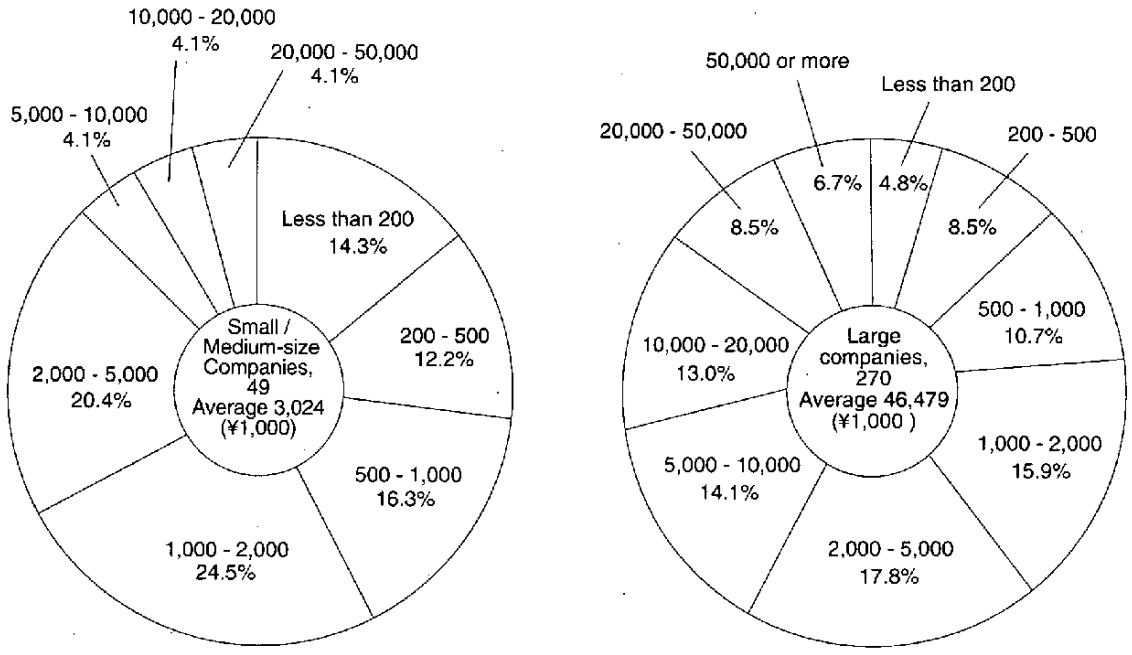


Figure 3-1 Distribution of Annual Database Utilization Sum by Company Size (Actual Result of 1989)

Source: "Survey of User Awareness of Database Services," DPC, March 1991

1.2 Remarkably Stagnated Utilization of Foreign Databases

Analysis of the utilization state in terms of utilization hours per company and month shows 70.2 hours for 1990 and an estimated 70.4 hours for 1991, indicating that utilization has leveled off. The ratio of utilization hours of Japanese databases run up to 48.4 hours (68.9%), and 21.8 hours for foreign databases, or less than half of the hours put into utilization of Japanese databases. The utilization of foreign databases shows a remarkable edging-off, as is evident from the expected 20.2% decrease in utilization of foreign databases, compared to the estimated 9.5% increase in Japanese database utilization in 1991 (See Table 3-4).

The monthly distribution of database utilization hours by company size shown in Figure 3-2 shows a utilization rate of 31.3 hours for small and medium-size companies. However, the rate of utilization hours not exceeding 5 hours is highest, 34.9%, followed by 18.6% for utilization between 10 and 20 hours, and 14.0% for utilization between 5 and 10 hours. Companies which utilize databases less than 20 hours (less than an average of one hour per day) stand for 67.5% of the utilization. A substantial variation can be seen among large companies, which may be divided into two extremes -- companies of less than 20 utilization hours (48.8%), and companies with more than 100 hours of utilization at a rate as high as 22.2%.

Table 3-4 Monthly Average Utilization Hours by Company Size

(Hours)

	Japanese database		Foreign database		Total	
	Actual result of 1989 (ratio)	Scheduled for 1990 (growth rate)	Actual result of 1989 (ratio)	Scheduled for 1990 (growth rate)	Actual result of 1989 (ratio)	Scheduled for 1990 (growth rate)
Small / medium-size companies	26.7 (85.3)	33.4 (25.1)	4.6 (14.7)	6.2 (34.8)	31.3	39.6 (26.5)
Large companies	60.9 (68.7)	64.5 (5.9)	27.7 (31.3)	23.3 (-15.9)	88.6	87.8 (–1.0)
Public services	26.4 (63.3)	30.1 (14.0)	15.3 (36.7)	6.6 (-56.9)	41.7	36.8 (–12.0)
Average	48.4 (68.9)	53.0 (9.5)	21.8 (31.1)	17.4 (-20.2)	70.2	70.4 (0.3)

Note: The parenthesized ratios show the gap between Japanese and foreign databases. 336 companies replied.
Source: "Survey of User Awareness of Database Services," DPC, March 1991

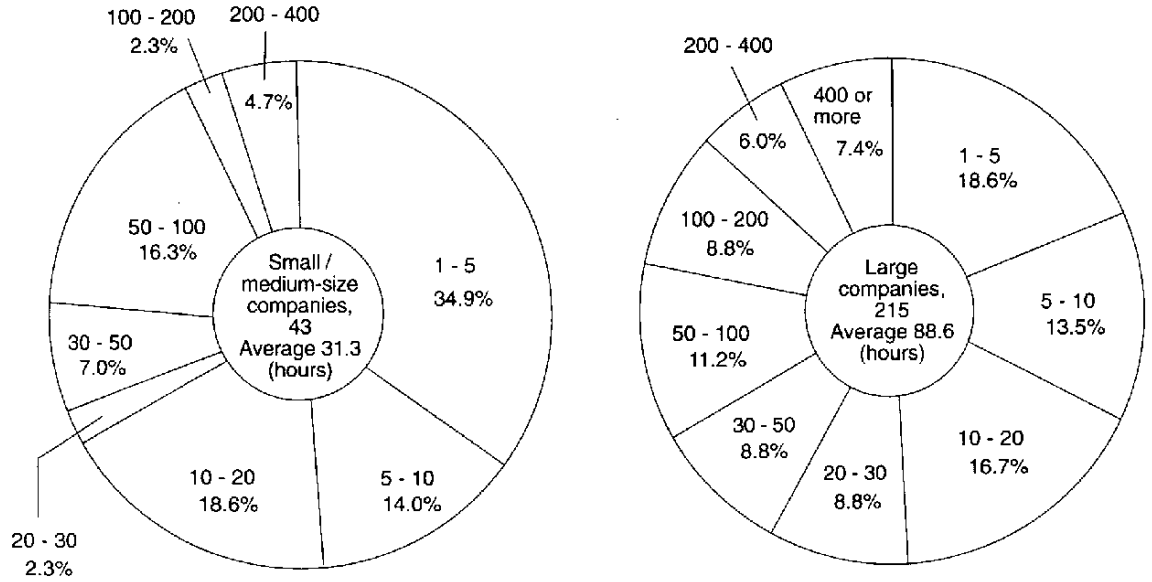


Figure 3-2 Distribution of Monthly Utilization Hours by Company Size

Source: "Survey of User Awareness of Database Services," DPC, March 1991

1.3 Utilization State by Industry Classification

The utilization state industry by industry may be characterized by considerable differences in database utilization, led by the "Finance and Insurance" and "Commercial" industries, in a comparison among 11 industry groups (Table 3-5).

Table 3-5 Classification by Industry Groups

Industry Group	Common Classification
1. Construction	Same as left
2. Petroleum and chemical	Pharmaceutical, petroleum, and chemical
3. Iron and steel, non-ferrous, metal	Iron and steel, non-ferrous metal, metal
4. Electric, transport, machinery	Electric equipment, transport equipment, machinery and precision equipment
5. Other manufacturers	Food, fiber/paper/pulp, glass and soil/stone, printing/publishing, newspaper, and others
6. Commerce	Same as left
7. Finance, insurance	Finance, securities, insurance
8. Information processing and supply	Same as left
9. Other office services	Real estate, transport/warehouse, electric power, gas, broadcast/communication, advertising, and other services
10. Public services	Schools and other educational institutes, hospitals and other medical clinics, research and study facilities, cooperations and other entities, government and local authorities
11. Others	Agriculture, forestry, fisheries, mining, and others

Note: The classification is based on the Japan Standard Industry Classification.
Source: "Survey of User Awareness of Database Services," DPC, March 1991

The number of systems utilized by "Finance and Insurance" is an average of 13.9 (compared to a total average of 6.5 systems) and a distribution breakdown shows that 36.4% of the industry uses 10 systems or more, the highest percentage in this comparison (See Table 3-6). In particular, average utilization sum far exceeds that of other industry groups, with average utilization hours exceeding 160 for both Japanese and foreign databases (See Table 3-7). A pattern of sales divisions utilizing market information (currency exchange, stock prices) and news, while keeping databases accessible over lengthy periods of time, is quite unique to this industry.

For the "Commercial" industry, the number of utilized systems is small and evidently oriented towards Japanese databases, both in terms of utilization sum and period.

There is also a trend of easy-system preference, and business divisions make up a high percentage of the utilization, for purposes such as acquisition of marketing and company information. Another feature is a high percentage of online utilization.

Table 3-6 Number of Contracted Systems

	No. of Replies	1 System		2 Systems		3 Systems		4 Systems		5–9 Systems		10 Systems or More		Average System No.
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Construction	29	7	24.1	5	17.2	2	6.9	4	13.8	8	27.5	3	10.3	6.0
Petroleum and chemical	72	2	2.8	7	9.7	7	9.7	4	5.6	26	36.1	26	36.1	8.2
Iron and steel, non-ferrous, metal	17	3	17.6	2	11.8	4	23.5	1	5.9	5	35.4	1	5.9	4.5
Electric, transport, machinery, manufacturer	48	2	4.2	5	10.4	5	10.4	5	10.4	21	43.8	10	20.8	6.6
Other manufacturers	56	8	14.3	7	12.5	5	8.9	2	3.6	21	37.5	13	23.2	6.9
Commercial	14	7	50.0	2	14.3	0	0.0	0	0.0	3	21.3	2	14.3	3.6
Finance, insurance	22	5	22.7	3	13.6	2	9.1	1	4.5	3	13.5	8	36.4	13.9
Information processing / supply	51	13	25.5	8	15.7	4	7.8	4	7.8	16	31.5	6	11.8	5.8
Other office services	47	11	23.4	4	8.5	6	12.8	3	6.4	9	19.2	14	29.8	7.4
Public services	90	22	24.4	19	21.1	16	17.8	5	5.6	20	22.1	8	8.9	4.2
Others	10	2	20.0	2	20.0	1	10.0	2	20.0	2	20.0	1	10.0	3.9
Total	456	82	18.0	64	14.0	52	11.4	31	6.8	135	29.6	92	20.2	6.5

Source: "Survey of User Awareness of Database Services," DPC, March 1991

Table 3-7 Annual Average Utilization Sum and Monthly Utilization Hours by Industry Group (Actual record of 1991)

	Annual average utilization sum (¥10,000)		Monthly average utilization hours (hour)	
	Japanese	Foreign	Japanese	Foreign
Construction	334.6 (61.7)	207.4 (38.3)	17.3 (96.1)	0.7 (3.9)
Petroleum and chemical	682.2 (45.6)	812.3 (54.4)	45.2 (50.0)	45.2 (50.0)
Steel, non-ferrous metal, metal	309.2 (74.9)	103.6 (25.1)	11.7 (93.6)	0.8 (6.4)
Electric, transport, machinery, manufacturer	610.1 (75.7)	196.1 (24.3)	38.5 (76.5)	11.8 (23.5)
Other manufacturers	2,424.8 (84.7)	436.7 (15.3)	23.8 (65.4)	12.6 (34.6)
Commercial	1,466.2 (93.2)	106.3 (6.8)	149.7 (98.6)	2.1 (1.4)
Finance, insurance	29,276.5 (57.9)	21,301.6 (42.1)	178.7 (52.0)	164.7 (48.0)
Information processing and supply	4,271.6 (95.7)	193.9 (4.3)	38.5 (79.1)	10.2 (20.9)
Other office services	1,036.7 (79.8)	262.7 (20.2)	110.0 (96.1)	4.5 (3.9)
Public services	209.6 (60.9)	134.4 (39.1)	28.0 (63.2)	16.3 (36.8)
Others	54.8 (48.2)	59.0 (51.8)	3.9 (90.7)	0.4 (9.3)
Average excluding finance and insurance	1,239.5 (76.3)	384.9 (23.7)		
Total	2,517.2 (65.8)	1,306.4 (34.2)	48.4 (68.9)	21.8 (31.1)
	(N=395)	(N=227)	(N=338)	(N=338)

Note: The average annual utilization sum differs between Japanese and foreign databases, due to a difference in reply rate. Parenthesized figures show the rate between Japanese and foreign databases. "N" indicates the number of samples. (No. of replies)

Source: "Survey of User Awareness of Database Services," DPC, March 1991

The "Petroleum and Chemical" industry also shows a high percentage, 36.1%, for contracting ten or more systems. The average number of contracted systems is 8.2. Though the utilization sum is relatively firm and stable, the utilization of this industry features more frequent access to Japanese databases than to foreign ones. Among divisions, the research division makes up for 45%, indicating that the industry makes orthodox use of databases, that is, access for the purpose of obtaining bibliographic information from magazines, papers, and newspapers, as well as patent information.

1.4 Database User Divisions in Various Industries

The situation of database utilization by division, viewed from the sum shown in Table 3-8, shows 24.2% for "Study," 23.1% for "Research," 13.5% for "Patent," and 10.4% for "Planning."

Divisions utilizing accessible databases frequently vary from industry to industry. In the construction, petroleum and chemical industries, the respective study divisions use the databases most frequently, occupying 34.8% and 45.4% of the total of respective industry. The patent divisions hold 35.0% and 42.5% of each of iron and steel/non-ferrous/metal and electric/ transport/machinery/manufacturer. In regard to the "Other manufacturers" group, utilization divisions are scattered, since this group includes various industries: 26.9% is used for study, 20.7% for research, 19.6% for patent, and 12.9% for planning. The sales division occupies 40.7% and 33.0% in each of the commerce and finance/insurance industries, while the respective research division of the information processing/supply, other office services, and public service groups.account for 38.1%, 30.3%, and 36.5%, respectively

Table 3-8 Utilization by Industry Division

	No. of replies	Planning (%)	Research (%)	Study (%)	Patent (%)	System development (%)	Production (%)	Sales (%)	General affairs (%)	Others (%)
Construction	27	15.0	6.5	34.8	13.1	9.3	0.7	11.6	2.4	6.7
Petroleum and chemical	66	9.2	14.4	45.4	19.3	0.2	0.8	4.4	0.0	6.2
Iron and steel, non-ferrous, metal	17	9.2	9.9	28.2	35.0	0.3	4.1	4.1	7.9	1.2
Electric, transport machinery, manufacturers	44	6.1	8.8	28.3	42.5	1.9	2.6	6.1	2.8	0.9
Other manufacturers	53	12.9	20.7	26.9	19.6	1.0	3.4	6.8	0.5	8.3
Commerce	12	19.3	17.3	5.0	2.5	3.3	0.0	40.7	9.2	2.8
Finance and insurance	17	7.8	16.8	0.8	0.0	1.6	0.0	33.0	5.6	34.4
Information processing and supply	49	6.0	38.1	6.4	6.8	9.0	3.7	15.7	5.8	8.5
Other office services	43	17.6	30.3	7.7	0.6	3.5	3.7	10.5	4.8	21.3
Public services	87	9.0	36.5	25.5	1.1	1.4	0.1	0.2	1.1	25.0
Others	8	10.6	19.4	26.6	13.4	1.3	2.5	11.3	12.5	2.5
Total	423	10.4	23.1	24.2	13.5	2.8	1.9	8.7	2.9	12.4

Source: "Survey of User Awareness of Database Services," DPC, March 1991

1.5 Number of Utilized Systems and Vendors

Table 3-9 shows the number of systems employed for utilization of databases. The overall average number of systems was 6.5 in 1989, which does not deviate much from the 6.7 systems of the previous research. However, the distribution situation shows that, in comparison to the rates of using one and two systems at 18.0% and 14.6%, respectively, the number of repliants that contract ten or more systems runs up to 92, or 20.2%. This trend was also observed in the previous research, and is probably an indication of division into two extremes.

Table 3-9 Distribution of Number of Vendors Used by Company Size

	No. of replies	1 System		2 Systems		3 Systems		4 Systems		5 Systems		6~9 Systems		10 Systems or More		Average of systems
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Small and medium-size companies	57	9	15.8	7	12.3	7	12.3	6	10.5	5	8.8	14	24.6	9	15.8	6.2
Large companies	304	50	16.4	37	12.2	28	9.2	19	6.3	19	6.3	77	25.3	74	24.3	7.3
Public service	95	23	24.2	20	21.1	17	17.9	6	6.3	10	10.5	10	10.6	9	9.5	4.2
Total	456	82	18.0	64	14.6	52	11.4	31	6.8	34	7.5	101	22.1	92	20.2	6.5

Source: "Survey of User Awareness of Database Services," DPC, March 1991

The average number of contracting vendors per user is 5.5, and repliants contracting one or two vendors occupy 33.4%, indicating a trend similar to the number of contracting systems. In the case of the Japanese database service industry, a majority of the producers also act as distributors, as described in Section 2. In other words, they sell the databases they produce. This is remarkably different from the U.S., where producers and distributors are separated to a considerable degree. The situation in Japan is more complex, where more than half of the end users have contracted five or more vendors, as shown in Figure 3-3, since large vendors do not grow at ratios observed in the U.S. Accordingly, users suffer from having to pay high utilization costs, due to the contract charges and fixed charges for database utilization.

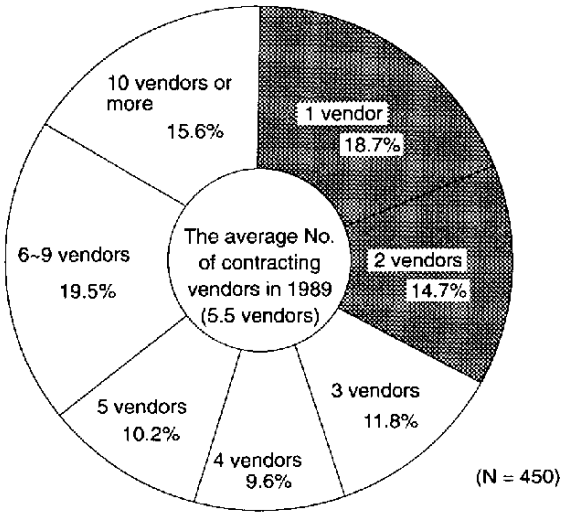


Figure 3-3 Number of Vendors

Source: "Survey of User Awareness of Database Services," DPC, March 1991

1.6 Online Utilization Pattern

For online utilization, the orthodox method of on-screen display and printing of search results accounts for the highest percentage at 94.5%. So-called high-level utilization of results through down-loading has increased, though slightly, from the previous survey. Industries showing a high rate of down-load utilization are finance/insurance at 33%, petroleum/chemical at 28%, and other manufactures at 23.2%. However, the total percentage of selecting down-load remains at less than 20%, since there are still only a few databases from which data can be down-loaded, or because some databases require separate down-load agreements.

Systems accessed frequently are JOIS (220 repliants), DIALOG (175), PATOLIS (173), NIKKEI TELECOM (170), and STN (54), as shown in Table 3-10. This indicates frequent use of Japanese databases. JOIS is used by 47.2% of all replying companies, and 37.1% use PATOLIS. By company size, 50.9% of the small and medium-size companies replying to this question use JOIS, 40.0% utilize PATOLIS, and 38.2% make use of DIALOG. In the case of large companies, 46.3% use JOIS, 45.6% have access to PATOLIS, and 39.2% are connected to DIALOG.

Table 3-10 Highly Utilized Systems, According to Number of Replies

1990 Order	1990 No. of replies	Name of systems
1 (1)	220	JOIS
2 (2)	175	DIALOG
3 (3)	173	PATOLIS
4 (4)	170	NIKKEI TELECOM
5 (5)	54	STN
6 (6)	30	NEEDS-IR
7 (10)	25	HINET
8 (7)	24	COSMOS
9 (8)	22	BRANDY
10 (9)	21	TSR
10 (11)	21	NICHIGAI-ASSIST
12	13	DIALINE
12 (12)	13	QUICK Video-1
12	13	BRS
15	12	ROYTER MONITOR
⋮	⋮	

(N = 466, Multiple Replies)

Note 1: Aggregate of top three vendors of utilization from each repliant
Note 2: ( ) - Order of previous survey
Source: "Survey of User Awareness of Database Services," DPC, March 1991

As is evident, percentage distribution and order are not very different. NIKKEI TELECOM, ranked fourth, is said to be utilized by all industries. PATOLIS is used very frequently by the manufacture industry, while certain industries do not use PATOLIS or JOIS at all.

Table 3-11 shows the aggregation of three databases with a high utilization frequency per system according to each replying company, along with systems with a high utilization sum. Databases ranked high have not changed very much recently, and databases used frequently are considered to be rather established.

Table 3-11 Databases with High Utilization Frequency

1990		Databases
Order	No. of replies	
1 (1)	190	JICST, Japan scientific literature file
2 (3)	166	Nikkei Newspaper article file
3 (2)	155	Japan patent utility model file
4 (5)	75	WPI
5 (9)	67	Asahi Newspaper article database
5 (6)	67	CA-SEARCH
7 (10)	62	Trademark file
8 (8)	58	CA
9 (4)	57	MEDLINE
10 (7)	45	JICST medical magazine Japanese medical literature file
11 (14)	38	CLAIMS
12 (11)	32	NIKKEI file
13 (12)	30	INSPEC
14 (13)	28	BIOSIS
15	28	COSMOS 2
⋮	⋮	

(N = 425, Multiple Replies)

Note: ( ) - Previous order
Source: "Survey of User Awareness of Database Services," DPC, March 1991

1.7 Problems with Commercial Databases

In utilizing commercial databases, about 40% of the users desire integrated thesaurus functions, and point out the necessity of standardizing article database currently produced at random by different producers. When viewed in terms of regions, some users in regions outside the metropolitan area are dissatisfied with their inability to down-load, or complain about the lack of gateway functions. Improvement and expansion in this respect are indispensable for the dissemination of regional databases.

Companies replying that they do not use commercial databases amount to 231 (32.4%). Reasons vary depending on the size of the company, except for the primary and secondary reasons, which are "No need" and "High fees." small and medium-size companies face basic problems in using databases, such as "Insufficient know-how" or "No terminals." Large companies appear not to use commercial databases due to in-house circumstances, such as "Not knowing where to get the database," "Small budget," and "Lack of search operators."

Table 3-12 summarizes all comments on functions and operability of commercial database commands. "Lack of integrated thesaurus," at 40.4% of the replies, was also ranked top in the previous survey. For industrial groups, the reply to this problem from finance/insurance is 0%, most likely due to the fact that thesaurus utilization is required mainly by literature database users.

Table 3-12 Comments on Functions and Operability of Commercial Database Commands

(%)

Problems	1990	1989
Commands not integrated	66.0	—
Function keys insufficient	8.3	11.9
Only command method is available for searching	8.7	9.4
Only menu method is available for searching	5.9	10.9
Keyword is insufficient	23.2	31.0
Lack of integrated thesaurus	40.4	43.6
Need function that allows reference to the appearance frequency of specific keywords by file or by database	12.8	16.2
Unable to perform down-loading	25.3	24.2
Lack of gateway function	18.4	22.3
Need functions that apply expert system	14.7	14.0
Necessary to use natural language as search language	27.4	37.5
Machine translation necessary as a function	7.3	9.2
Insufficient conversion function (kana, kanji, etc.)	—	11.4
Trouble with connection procedures	20.6	20.6
Slow search speed low	35.9	41.4
Others	3.3	4.1

(N = 423, Multiple Replies)

Source: "Survey of User Awareness of Database Services," DPC, March 1991

Users replying that they do not use commercial databases run up to 32.4% (231 companies) of the total, of which 223 companies motivated their selection. The "No need" reply remains as high as 56.5%, followed by "High fees" at 22.4%, "No budget allowance" at 11.7%, and "Not knowing where to get the database" at 11.2%. Apart from the primary and secondary reasons ("No need" and "High fees"), reasons of not using commercial databases vary with the size of the company. small and medium-size companies face basic problems, such as "Insufficient know-how," "No terminals," etc. Large companies that do not use commercial databases face company problems and indicate that they "do not know where to get a database," "have no budget," or "have no search operators," etc.

1.8 Future Utilization of Commercial Databases

Figure 3-4 shows the outline of future utilization among 223 users that reported no current usage. 93 (41.7%) of these indicated possible use of databases in the future, of which 4.9% might put commercial databases to use within a year, and 36.8% might be users in 2-3 years. However, 58.3% of the total indicated "No scheduled usage at all," a constant figure, regardless of company size.

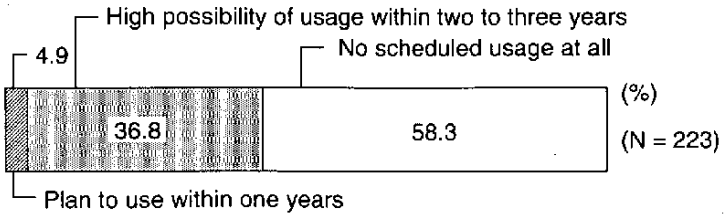


Figure 3-4 Possible Usage of Commercial Databases

Source: "Survey of User Awareness of Database Services," DPC, March 1991

Figure 3-5 shows a summary of the replies from companies currently not using databases, in terms of fields and collecting areas in which they want to use databases in the future. Classification of major fields shows that 34.3% desire databases for business purposes, 29.6% for natural science and technology, and 23.2% for general utilization. The rate for social and cultural sciences is slightly lower at 12.4%. When viewed in terms of collecting area, Japan occupies 52.8% of all replies. However, the needs in social and cultural sciences is dispersed over many areas. Japan is particularly dense in the business field at 72.6%, and the needs in minor fields, such as for market/commodities and newspaper/magazines/news, is growing.

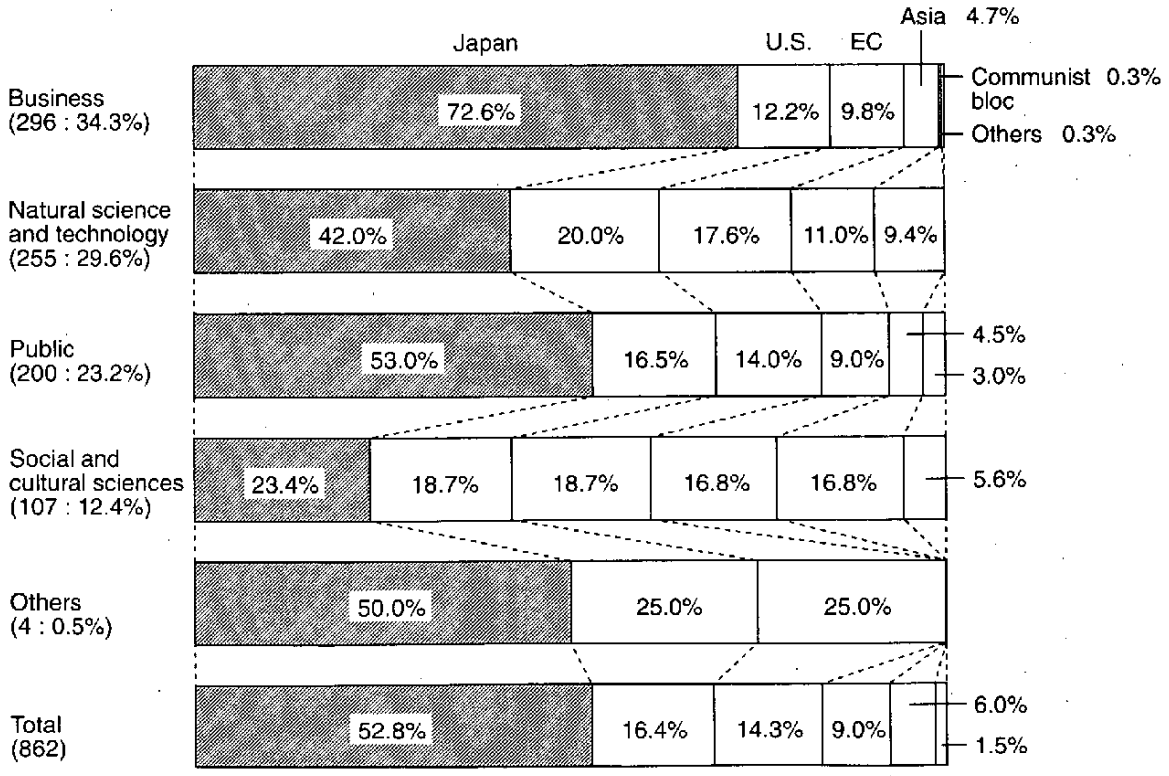


Figure 3-5 Subject and Collecting Area of Databases for Future Use (N=862, Multiple Replies)

Source: "Survey of User Awareness of Database Services," DPC, March 1991

2. Database Utilization in Daily Life

2.1 Survey on Users of PC Network Service

When viewed as an industry, database service remains premature. The accelerated expansion of information networks and spread of personal computers (PC), however, will surely have a considerable impact on daily life utilization.

The DPC has conducted a survey on users of PC network service, in order to grasp what role database services play in daily life.

Up to now, opportunities for consumers to access commercial databases for daily life purposes have been extremely limited. Now though, when PC are stepping into people's homes to a greater extent, database utilization has become more available and important. At present, the number of PC network service users in Japan is roughly half a million.

The features of this type of service include electronic mail, electronic bulletin boards, electronic conferences, database search, transaction services, etc. Used for this survey was the electronic bulletin board of NIFTY-Serve, a popular Japanese PC network service with about 130,000 users as of October, 1990.

16 questions were displayed on the board, regarding the user's sex, age, occupation, and other personal data, as well as the purpose and state of commercial database utilization via PC network service. Though the survey was intended for all NIFTY-Serve users, there exists an offset different from the survey based on general sampling because users were interested in the databases on viewing the bulletin board. The survey was conducted for two weeks from September 27 to October 10, 1990.

The total number of repliants was 1,326. Sample composition by sex, age, kind of occupation, and residential area is shown in Figure 3-6. Viewed by sex, a vast majority (93.5%) were male. By age, repliants in their 20s and 30s run up to roughly 80% of all, with a respective 41.0% and 39.7%. In terms of occupation, public servants and corporate employees make up for 65.5%. This tells us that the repliants are mostly salarymen in their 20s and 30s.

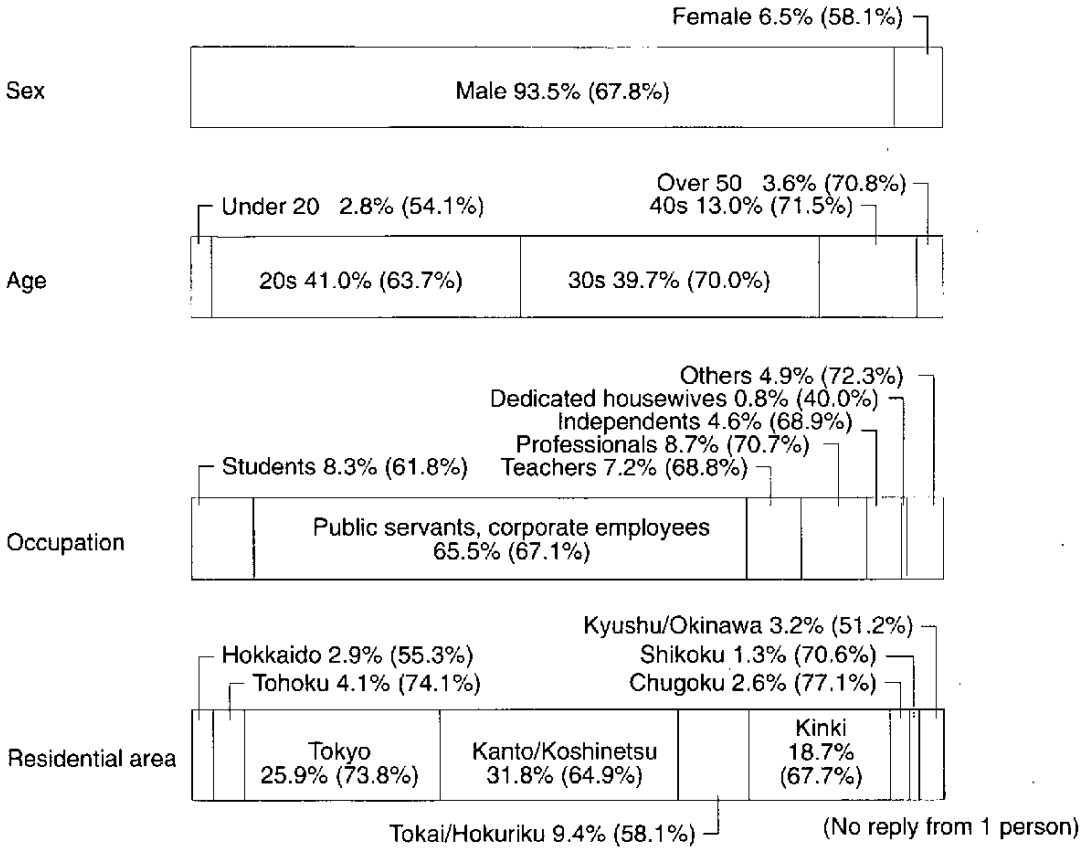


Figure 3-6 Repliant Attributes (1,326)

Note: ( ): Ratio of experienced users
Source: "Survey of User Awareness of Database Services," DPC, March 1991

2.2 Commercial Database Utilization — Experience and Workplace

Among 1,326 repliants, 891 (67.2%, a majority), had used commercial databases via PC network service. If viewing all repliants by age, people in their 40s are the most frequent commercial database users at 71.5%, followed by people in their 50s at 70.8%, and ones in their 30s at 70.0%. People younger than that do not use their PCs as much for accessing commercial databases; 63.7% of people in their 20s answered positively, and 54.1% of the repliants younger than that had used commercial databases in some way. In addition, there seems to be a sincere interest in commercial databases, since 435 users replied to the questionnaire without having any experience of using commercial databases.

Among the 891 repliants who use databases, "home" was the most popular place for utilization at 56.5%, followed by "the office" at 43.0%. Only two repliants answered that they had used public libraries or public institutions for database utilization. These institutes have problems in purchasing PCs, setting up database assignment systems, or coping with the utilization fees for public data communication line. This hinders utilization, although users are ready to use.

Viewed by occupation, 52.4% of the public servants and corporate employees connect their PCs to commercial databases at the office. This may indicate database utilization as an extension of business. On the other hand, the percentage of people accessing commercial databases

at home is high among dedicated housewives, students, teachers, as well as independents and professionals.

2.3 Commercial Database Utilization — Purpose and Charge

Regarding reason for utilization, 46.7% of the repliants use it in their work, followed by hobby purposes at 30.0%, purchases/reservations at 8.5%, and moneymaking at 3.6%. Let us look at these figures by making a rough division into work and daily life. If we consider hobbies, stock/investment/moneymaking, and purchases as purposes of using databases for daily life as opposed to work, it nearly equals each other: 46.7% utilization for work and 42.1% for daily life. This means that databases are not only used for work purposes, but also as tools in daily life.

The monthly utilization charge of commercial databases are mostly high, 40.4% of the answers in the range of ¥1,000-5,000. Users utilizing databases at charges lower than ¥1000 make up for 32.1%, 17.5% pay ¥5,000-10,000, and 10.0% pay ¥10,000 or more. Above average, the charges fall into the range of newspaper subscription fees (Figure 3-7).

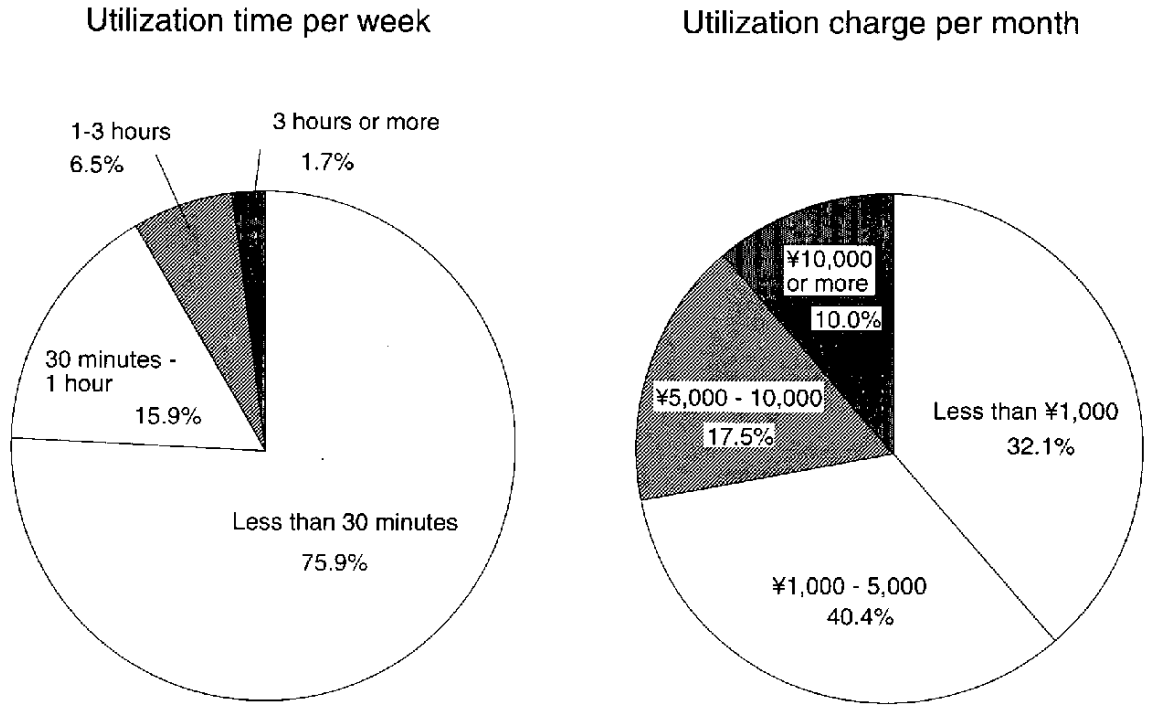


Figure 3-7 Database Utilization Time and Charges

About 80% of the users think that the charges are high. Though making profit may be is a problem which suppliers must overcome, the subject here is how to supply database service at a low cost.

This survey shows that there are a lot of latent database users closely related to daily life (See Figure 3-8). Spread of information as well as efforts for more effective database utilization is required, along with improvement and expansion of databases related to daily life, if databases are to be assimilated into daily life nationwide.

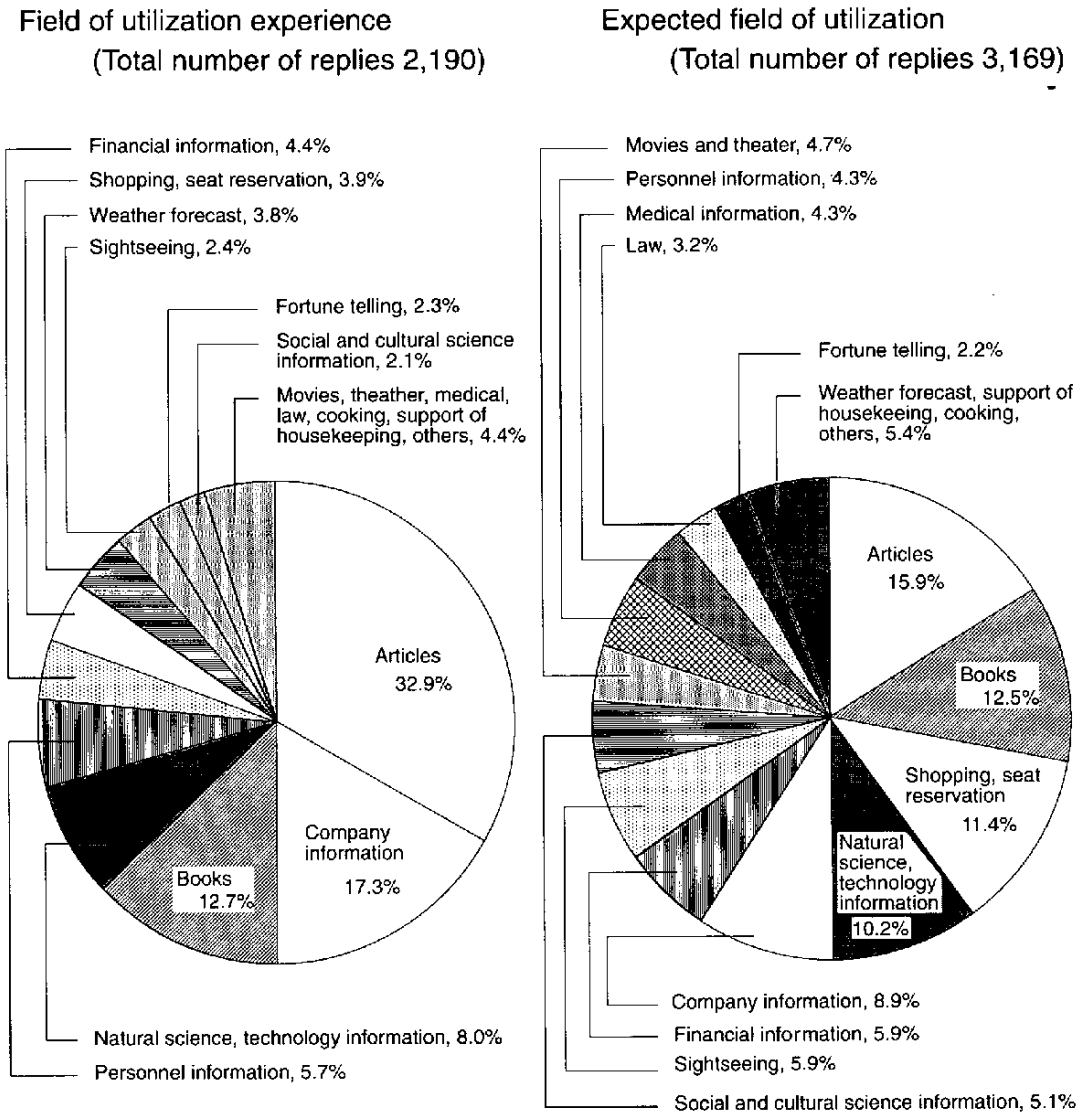


Figure 3-8 Database Utilization Subjects

2.4 Subjects Utilized and Subjects Desired

(1) Subjects Utilized

In all types of business, newspaper article databases are the most widely utilized. Apart from these databases, students utilize bibliographic information in first hand (18.3%) and business information (11.0%), public servants and corporate employees preferably use business information (20.4%) and bibliographic information (10.5%), teachers and school employees look at bibliographic information first (20.9%), then at information on natural science and technology (10.8%), professionals mostly flip through bibliographic information (16.5%), bibliographic information (13.7%), and information on natural science and technology (11.3%). Individuals check both business and bibliographic information (each at 14.3%), dedicated housewives go through bibliographic information (23.1%), theater and movie guides, mail order purchases and reservations (each at 15.4%), while others scan business information and bibliographic information, in this order.

As a whole, utilization of newspaper articles and business information databases runs up to nearly 50%. Except for students, this type of information is considered to be used for business purposes. Apart from these two kinds of database, there is quite some variation in entries, most of the rest is considered to be used in daily life.

(2) Subjects Desired

As stated, there is quite some variation in the subject. Students request newspaper articles, order purchase services, and reservations, similar to public servants and corporate employees, who demand newspaper article information, mail order purchases and reservations. Teachers want newspaper articles and bibliographic information, professionals need bibliographic information and newspaper articles, and independents read newspaper articles and business information. Dedicated housewives eye medical agency information and bibliographic information, while others view newspaper articles and bibliographic information, in this order.

Concerning desired subjects, all groups returned a great variety of replies, which might indicate a lot of latent desire for database service. On the whole, database utilization for daily life is more desired than further business utilization.

2.5 Utilization of Personal Databases

Personal databases are databases established for information utilization by a single person or within a group or organization, excluding private information files downloaded from commercial databases. When asked whether personal databases are used for PC network service, many replied that they did not even know what personal databases were. A mere 10% (137 repliants) were using personal databases. Similar to the case of desired databases described above, many replies included points that may prove useful during production of databases in future.

Listed below are some of the most common replies:

- Private bibliographic data
- Address lists and name card management
- Lists of theaters and theater companies
- Lists of TV programs and staff involved therein
- Musical data
- Computer user lists
- Utilized PC information
- Regional amateur sports results
- Information on user's own subject of specialization
- Hobby information on technologies and events

2.6 Database Expansion and Profitability

All replies indicate that databases are utilized mainly to obtain information needed for work and daily life. Now, however, subjects supplied mostly consist of newspaper articles, bibliographic information, and business information, which are also supplied in this order. Subjects that are not yet available but wanted are mostly for daily life utilization, so production and supply of wide-field databases can be expected. However, in view of the vast amount of information contained in newspaper articles, bibliographic information, and business information, it is necessary not to freeze the supply of bibliographic data but to keep databases up-to-date.

Along with supply of electricity, water, and gas, database service is one of society's key resources. But commercial databases cannot be established unless it proves to be profitable, that is, if there is a market. Judging from replies by age, occupation, and region, there are a lot of latent database users. In this view, it is essential to heighten these users' awareness of the effectivity of using databases, in order to solve the problem of profitability.

In another sense, this also means that there is a strong demand for diversification, expansion, and improvement, especially when it comes to quality. This is proved by the establishment of personal databases, which are used to acquire information closely related to daily life.

IV. IN-HOUSE DATABASES

1. Role and Meaning of In-house Databases

1.1 Remarkable Spread in Small and Medium-size Companies

There is an active production of in-house databases to be utilized within a limited range in the companies, government agencies, and schools. According to the "Survey of User Awareness of Database Services," 481 companies (68% of all 707 replies) had already produced in-house databases. The breakdown is shown in Table 4-1. 73.4% of all large companies used in-house databases, to be compared with small and medium-size companies at 43.8%, indicating a large gap according to size.

Table 4-1 In-house Database Retaining State (Single Reply)

Classification		No. of replies	Retaining	
			No.	%
By size	Small and medium-size companies	96	42	43.8
	Large companies	458	336	73.4
	Public service	153	103	67.3
By industry type	Construction	38	26	68.4
	Petroleum and chemical	81	58	71.6
	Iron and steel, non-ferrous, metal	29	22	75.9
	Electric, general, transport machinery manufacture	62	46	74.2
	Other manufactures	86	66	76.7
	Commerce	37	27	73.0
	Finance and insurance	33	26	78.8
	Information processing and supply	105	51	48.6
	Other services to business offices	76	52	68.4
	Public services	143	98	68.5
	Others	17	9	52.9
Total		707	481	68.0

Source: "Survey of User Awareness of Database Services," DPC, March 1991

The rate at which different business groups retain in-house databases shows, with the highest rate of usage first, Finance/Insurance, Others, Iron/Steel/Non-ferrous, Electricity/General/Transport/Machinery, and Commerce. More than 70% of the companies in these industry groups utilize in-house databases. On the other hand, the information processing and supply industry, which now increasingly puts databases to use, is at the low rate of 48.6%.

When in-house databases are viewed from the time of production, 1985 must be highlighted in two respects (Figure 4-1). The first is that in 1985 database utilization accelerated at a double-digit rate, and the second that the production rate of small and medium-size companies exceeded that of large companies, as a result of general rapid growth.

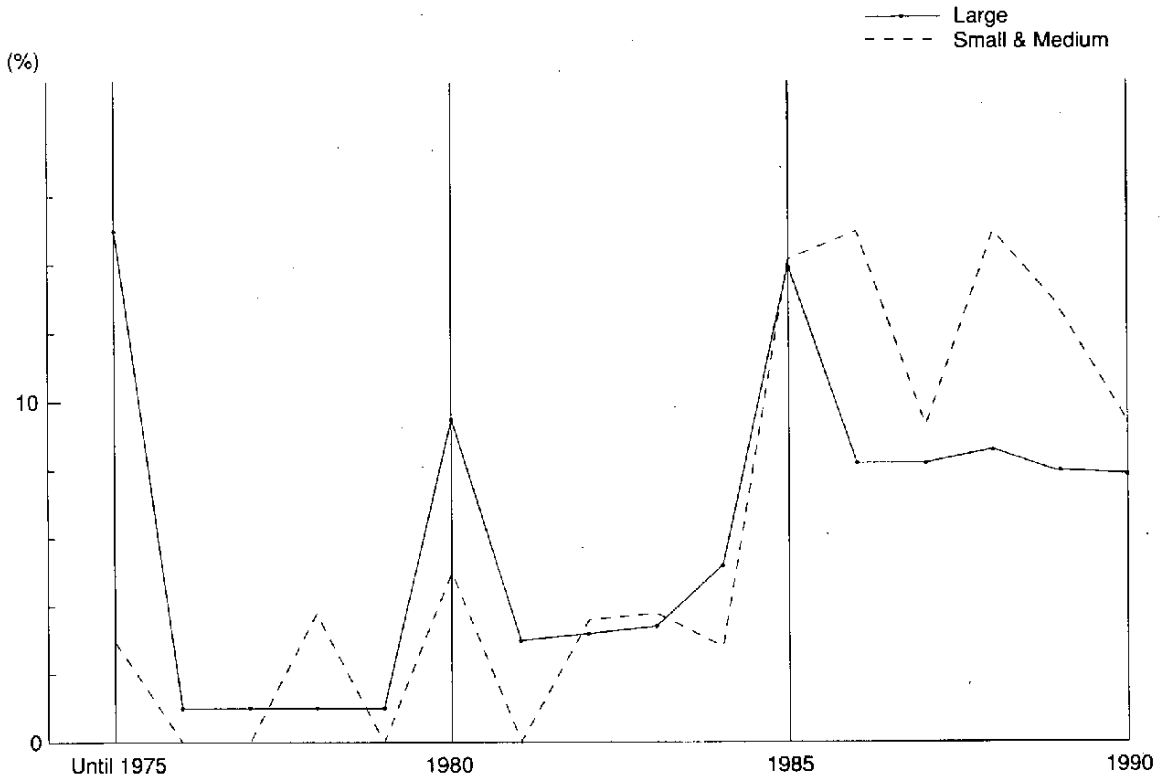


Figure 4-1 Transition of In-house Database Production Ratio for Each of Small/Medium-size and Large Companies (Number of Production per Year/Aggregate of Number of Production) x 100

Source: "Survey of User Awareness of Database Services," DPC, March 1991

In 1985, communication was totally liberalized and lots of private companies entered into VAN service. As a result, conventional information utilization within the company was replaced by promoted strategic information utilization, such as company affiliation through customer information or enclosure, along with improvement of the social information infrastructure and easy setting up of networks between companies. This is how SIS started out, and this made companies really acknowledge the importance of information for business purposes.

Among small and medium-size companies, in particular, this was taken on as a tool to execute managerial strategies or to eliminate threats to the strategy. They can be said to arm themselves with databases through positive investment.

1.2. Changing the Sales Division with SIS

Information systems in sales divisions have greatly lagged behind e.g. inventory control systems in production divisions or personnel administration systems in management sections. Now, however, sales divisions undergo greater changes than ever. If a sales division is to get ahead of rival companies on a competitive market, the businessmen of that division must always be up-to-date with the latest user needs to get an immediate response. This has lead to the setting up of an SIS (Strategic Information System) in many companies. SIS facilitates quickly acquired information through utilization of computers, networks, and databases.

For example, Lion Co. Ltd. has developed a simulation model for efficient distribution of marketing expenses and for drawing rapid and proper market estimations. Predicting the market is namely becoming very difficult, due to diversification of consumer needs, an increase of commodities, and the complicated state of competition. Nippon Life Insurance Company has produced a database for the market and all their customers, as well as put 2,000 or more business locations nationwide into their network system, in order to cope with customer needs and sophistication. About half, 40,000, of their business representatives carry a handy terminal for demonstrating premiums or shares to customers during door-to-door sales or contract maintenance.

The most important reason for producing in-house databases is effective utilization of in-house information at 46.7%, followed by 41.8% for improving efficiency in management, 32.1% for improving efficiency in inventory control, and 31.3% for improving sales promotion. That of SIS utilization and other management strategies stops at 11.4% (See Figure 4-2).

Utilization of in-house database tends to be sophisticated and is important in management strategy. Companies now want to establish systems targeted at strategic use of information.

1.3. Willingness to Enter into the Database Industry

Firms are not very eager to commercialize recently produced in-house databases. Since most in-house databases are aimed at sharing in-house information and are meant for strategic management use, the reason for setting up this kind of database is originally very different from that of commercial databases.

On the other hand, according to the "Survey of User Awareness of Database Services," 41 companies plan to supply their in-house databases as commercial ones.

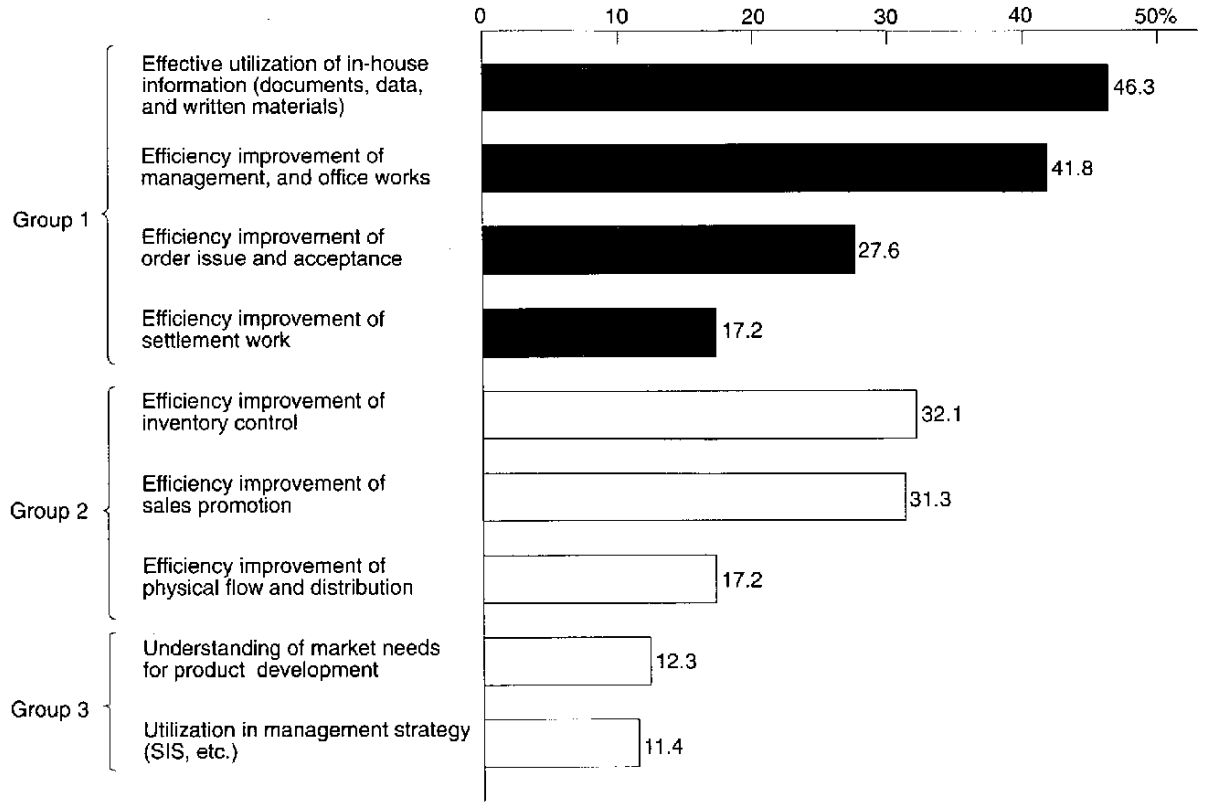


Figure 4-2 Purpose of Production of In-house Database (Multiple Replies)

Source: "Survey of User Awareness of Database Services," DPC, March 1991

Among them, 12 are planning for commercialization within three years. 23 companies (57.5%, multiple replies) will supply "as a producer" and 21 companies (52.5%) "as a distributor." Thus, many different industry types wish to enter into the database industry (Table 4-2).

Table 4-2 Reason for not Supplying as Commercial Database (Multiple Replies) (%)

Reason	Reply ratio
1. In-house info only, no commercialization	91.7
2. Commercialization desired, no knowhow	0.5
3. Commercialization desired, no operators	0.9
4. Commercialization desired, not feasible	2.4
5. Others	9.0

Source: "Survey of User Awareness of Database Services," DPC, March 1991

V. INTERNATIONAL DEVELOPMENT OF DATABASES

1. Globalization of Japanese Database Services

1.1 State of Globalization

As Japan's international status is heightened, overseas needs for Japanese information continue to increase. Information on Japan is becoming essential for any European or American company in administering their business strategy.

Under these circumstances, it is one of Japan's obligations as a major economic power to promote international distribution of Japanese information.

The Japan Database Industry Association (DINA) has conducted a series of surveys of its members and other database producers and distributors in Japan, in order to establish availability of Japanese database services on the overseas market, as well as to detect problems encountered by companies that are extending their services abroad. The questionnaire was distributed to a total of 200 companies (105 members of DINA and 95 others), and 138 replied (reply ratio: 69.0%) as of August 28, 1991.

Of the organizations that replied, 44 are currently offering database services abroad, while another 19 are planning to provide such services.

According to this survey, the number of Japanese databases provided overseas amounts to 226 as of August 1991, which is an increase of 71 databases from the number of 155 in 1990, with a growth rate of 45.8% from 1990.

Furthermore, the number of the databases planned for overseas distribution amounts to 29. The more the quality of Japanese databases advances, the more they will be needed overseas.

However, the number of Japanese databases installed overseas is limited compared with the number of foreign databases, which totals 1,546. Of the total number of Japanese databases (808), as many as 28.0% of them are provided overseas. In 1987, when the survey was commenced, only 28 databases were provided overseas, or only 6.2% of all Japanese databases. Therefore, the latest overseas distribution figure may be regarded as showing a remarkable increase. (See Table 5-1)

Table 5-1 Number of Japanese Databases Available Overseas

Subject \ Time of Survey	February 1987	July 1988	July 1989	July 1990	August 1991
Science and Technology	9	20	22	39	26
Economics, Business, Finance	16	51	65	82	120
General	3	14	23	51	104
Total	28	85[1)]	110[2)]	172[3)]	250[4)]

Note 1) : The 1988 survey total includes duplicates. The actual number is 83.
Note 2) : The 1989 survey total includes duplicates. The actual number is 104.
Note 3) : The 1990 survey total includes duplicates. The actual number is 155.
Note 4) : The 1991 survey total includes duplicates. The actual number is 226.
Source : Japan Database Industry Association

The two tables in the appendix describe the Japanese databases offered overseas, and a preview of Japanese detabases planned for expansion overseas as of August 28, 1991.

1.2 Globalization Problems Encountered by Database Services

In providing databases overseas, the Japanese side will have to overcome many problems, such as translation into English, sales buildup, distribution and service networks, as well as training of personnel who can act as consultants for overseas users. Some of these problems are too tough to be tackled by private companies, from the viewpoint of profitability.

In 1989, DPC formed a committee for solving the problems of globalization of Japanese databases. The committee has discussed and proposed measures for promoting overseas distribution of Japanese information. The following are some of the main subjects:

1) English translation of databases through development of machine translation (MT)
2) Precise understanding of overseas needs
3) Continuation of publicity activities
4) Establishment of permanent database clearing organs
5) Support policies and aid systems for overseas distribution

In accordance with the above proposals, a research study was commenced in 1990 to develop MT systems for Japanese databases and to promote MT utilization.

Moreover, the question stated in the DINA survey, on what issues would arise when providing database services for overseas use gave a variety of answers, summarized as follows:

1) Language Difficulties (16 replies)
   Cost problems related to developing databases in English, translating Japanese text into English for databases, and producing user manuals make it difficult to provide overseas services. Overseas availability of terminals with Japanese language processing capabilities is another obstacle.

2) Problems Related to Operation and Service (14 replies)
   24-hour host computer operation is necessary for overseas online service. However, this increases overseas service costs. Also, help-desk service and user training for overseas users are limited, due to personnel shortage. Establishment of overseas agents or subsidiaries also create difficulties.
3) Limitation of Databases Available in Japan (9 replies)
   Few databases with a global market value are available in Japan, which makes Japanese database services difficult to cope with for large foreign vendors. Government investments are necessary to develop internationally marketable databases. Improvement and development of databases in Japanese should be considered first, since important data from government organizations and research institutes are not included in conventional Japanese databases.
4) Problems Related to User Fees (3 replies)
   The remittance charge for overseas users is very high compared to ordinary user fees. Development of overseas user charge systems requires additional efforts. Overseas users expect moderate charges, comparable with that of the databases they use at home.
5) Problems Related to Telecommunication (3 replies)
   Online databases with fax transmission capabilities for document delivery require a 40–50 times higher communication charge, which further elevates user fees. This often creates telecommunication problems, since few systems provide 8-bit units for online service.
6) Problems Related to Manpower (2 replies)
   Shortage of personnel capable of carrying out overseas services
7) Other Problems
   - Settlement of machine and telecommunication problems
   - Limitation of overseas services, based on vendor agreements
   - Anxiety that large foreign vendors may demand exclusive rights to all marketable databases
   - Problems with third-party usage
   - Time and costs required for maintenance
   - Requests from foreign users to have DPC or DINA provide single reference points on Japanese databases

2. International Trends on Japanese Information

The political, economical, and scientific interdependence between Japan on one side and Europe, the U.S., and Asian countries on the other side has boosted, along with Japan's increased international importance.

Vehement changes, particularly the end to the cold war sustained for 40 years after World War II, the collapse of the socialist bloc in Eastern Europe, as well as the Gulf war and other clashes in the Middle East, has lead to a relative decline of the two leading super powers, the U.S. and the U.S.S.R. As a result of this, there is now a proportionally higher rate of foreign expectations and demands on Japan.

Foreign utilization of Japanese information and databases has passed the stage of general discussions or establishment of political framework, and what must be done now is reviewing specifically how to utilize what kind of information.

2.1 The U.S. Policy

During the '80s, the U.S. dominance in science, technology, and industry fields took some heavy punches. Initially, this situation was not taken seriously in the U.S., where specialists both in the private and government sectors showed an apparent lack of interest in collecting information on development of science and technology in other countries.

Under these circumstances, however, the Japanese Technical Literature Act was enacted in August, 1986, for the purpose of collecting Japanese technical information and establishing utilization systems, followed by the STRIDE (Science and Technology Reporting and Information Dissemination Enhancement) project based on a presidential decree in April, 1987. This decree was originally intended to heighten the U.S. competitiveness, and was included as a vital part of collection and utilization of foreign science and technology information. According to the STRIDE project, the State Department, Department of Commerce, and National Science Foundation are to cooperate in establishing a system to collect, evaluate, and utilize Japanese information. The project is also meant to improve information collection systems of the U.S. official organizations in Japan, as well as to support and coordinate specialists for study visits to Japanese organizations and company laboratories. Also, acquisition of information from private companies is encouraged.

Moreover, the U.S.-Japan Agreement on Cooperation in Research and Development in Science and Technology signed in July, 1988, further promotes mutual exchange of science and technology information between the two countries. Among the U.S.-Japan joint committees established on each level through this agreement, the Task Force on Information Access has held annual meetings in Tokyo in April, 1989 and in Washington, D.C., in April, 1990.

In order to encourage the U.S. utilization of Japanese information and databases, the Department of Commerce edits and releases "the Handbook on Japanese Technology Information Sources in the U.S." every year since 1987. The 1989 edition had for the first time a chapter on Japanese online databases. This chapter in detail describes the contents, languages used, access methods, necessary terminals and equipment, location and addresses including phone and fax numbers of 40 Japanese databases. The chapter was summarized separately as the Handbook on Japanese Databases, 1990", released by the Department of Commerce in 1990.

A total of 43 Japanese online database service systems were included in the 1990 edition. The handbook also included a list of government organizations, companies, and laboratories offering service on Japanese technology information to end users in the U.S. The list shows that a total of 241 organizations and companies offer services on Japanese technology information all over the U.S., including 167 private companies and individual services, 50 government organizations, and 24 libraries. Among these suppliers, 34 organizations and companies supply and support online database services on Japan, while 132 translate of technical literature.

The geographical distribution of these suppliers is shown in Table 5-2. Particularly dense are the West Coast and New York because of strong economical ties with Japan, Washington D.C. where political interest in Japan is high, as well as Ohio and Michigan, whose relations with Japan grow along with recent Japanese companies' progress and investments.

A heightened interest in information on and from Japan is also found in various non-profit organizations. The Special Libraries Associations held two regional subconferences (the North Atlantic Group and the Pacific Group) during their annual conference in Pittsburgh in June, 1990. The Pacific Group subconference presented reports directly concerning Japan.

Dr. Joseph E. Clark, Diputy Director, NTIS, Department of Commerce, reports as follows:

The activity of NTIS is basically information collection on pan-Pacific countries, with a specific focus on Japan.

The purpose of NTIS is to collect and disseminate science and technology information produced not only by the U.S. government, but also from other countries. NTIS publications include the "Foreign Technology Abstracts Newsletter," "Directories of Japanese Technical Resources in the U.S.," "Directory of Japanese Technical Reports," and "Directory of Japanese Online Database" for the directories on Japan, "JTEC Reports," evaluating Japanese high technologies, as well as "Foreign Broadcast Information Service" and "JPRS Reports" for other fields.

NTIS has information collection organizations in many pan-Pacific countries, including the Mitsubishi Research Institute, Inc. and the Japan Information Center of Science and Technology (JICST) in Japan. NTIS also collects about 1,300 technology reports annually, in compliance with 50 official laboratories and high-tech companies.

Table 5-2 Regional Distribution of Japanese Information Service Organizations/Companies

State	Number of service agencies
1. Washington D.C. and surroundings	
Washington D.C.	24
Maryland	16
Virginia	16
Pennsylvania	13
Subtotal	**69**
2. Northeast	
New York	21
New Jersey	3
Connecticut	7
Massachusetts	8
Subtotal	**39**
3. West Coast	
California	47
Oregon	5
Washington	3
Subtotal	**55**
4. Midwest	
Ohio	18
Michigan	11
Indiana	3
Illinois	4
Subtotal	**36**
U.S. total	241

Note: The U.S. total includes other locations as well.
Source: Directory of Japanese Technical Resources in the U.S., 1989

JOIS, a database system offered by JICST, is one of Japan's main databases for science and technology information, currently accumulating about 70,000 records through data collection from 4,000 or more journals or technical reports in Japan. JOIS also has a file in English, titled JICST File on Science, Technology, and Medicine in Japan.

The development of MT is pushed forward to eliminate language barriers, since the Japanese language is so different. Apart from the efforts of JICST on MT, nine Japanese computer manufacturing companies have realized MT systems, using mainframes and workstations.

Table 5-3 shows the distribution by country of technical reports collected and entered into a database (GRA), according to the NTIS foreign technology information collection program. Note that Japan is ranked second, only surpassed by the U.S.S.R.

Table 5-3 Number of Reports Collected by NTIS from Each Country for the Pan-Pacific area in 1989

Country	Number of reports
U.S.S.R.	1,578
Japan	1,266
China	254
Australia	190
Korea	92
Taiwan	51
Malaysia	8
The Philippines	5
New Zealand	5
Singapore	2
Indonesia	1
Hong Kong	0
Total	3,452

Source: Report by Dr. Joseph E. Clark, taken from the 1990 SLA Meeting

During the 53rd Annual Meeting of ASIS (American Society for Information Science) held in Toronto, Canada, in November, 1990, a pan-Pacific subconference was held for reports on and reviews of Asian databases, including utilization of information on and from Japan. Japan Database Industry Association (DINA) presented a report on the situation in Japan.

2.2 The European Trend

In European countries, there are two types of establishments in regard to the systems for utilization of Japanese information. One is utilization by each country, and the other is common utilization systems available all over Europe. The former is developed through the efforts of each country. For the latter, discussions on methods for cooperation have just started, based on experiments carried out by each country.

The First Annual Meeting of EAJRS (European Associations of Japanese Resource Specialist) was held in Budapest, Hungary, from September 5 to 8, 1990. The organization was founded in Berlin in October, 1989, and its members include Japan and Japanese information specialists from European universities or official research institutes.

About 50 specialists from Europe, Japan, and the U.S. gathered for the Budapest conference and exchanged information and comments on the present state and problems concerning collection of Japanese literature and information. Participants included 10 specialists from the

U.K., 9 from Germany, 2 each from Austria, France and Netherlands, and 1 each from Denmark, Sweden, and Switzerland. There were also attendants from Eastern Europe, who reported on the present state of collecting Japanese literature in the U.S.S.R., Czechoslovakia, and Hungary (See Table 5-4). Also attending the meeting were specialists of related organizations and institutes in the U.S. and Japan.

The main theme of the meeting was library collection and index preparation for Japanese literature. Production and utilization of this unique database are still in the initial stages, except for promising reports from Germany and the U.K. Anyhow, the present state of Japanese literature collection in each country was disclosed in this meeting. Particularly interesting was the up to that point unpublicized state of Japanese collection in the U.S.S.R., Czechoslovakia, and Hungary. A project of producing a European joint index of Japanese literature was also discussed.

In Britain, NACSIS-CAT, a Center index database, was linked to the British Library in January, 1990. This linkup pioneered the production of a Japanese library database in Britain. Currently, the British Library prepare to offer service to NACSIS-CAT for seven organizations operating Japanese terminals, via an inter-college network (JANET-UK, Joint Academic Network).

The network for these seven organizations will include two terminals at the British Library in the Japanese Information Service and Oriental Collection sections, and one terminal each at the University of Cambridge, Oxford University, the University of Sheffield, Sterling University, and the University of London. The cost for linkage and terminals is to be borne by the Japanese side. These organizations are trying to produce a joint index for in-house Japanese documents and journals by using NACSIS database and Japan MARC, CD-ROM version (J-BISC). The host computer will be installed at the University of Cambridge. This project is funded by the Yamato Foundation and the Japan Foundation.

Link experiments in connection to this have been conducted by NACSIS and the British organizations. Once this project is successfully completed, the next step — cooperation with user organizations all over Europe — will be studied.

References

1) *Directory of Japanese Databases 1990*, prepared by the U.S. Department of Commerce, NTIS, Springfield, VA., PB90-163080

2) *Directory of Japanese Technical Resources in the United States 1989*, prepared by the U.S. Department of Commerce, NTIS, Springfield, VA., PB89-158869

3) The Program of the 2nd EAJRS Conference in September, 1990, and a paper on the Union Catalogue Pilot Project, submitted to this conference by S.V. King on behalf of the British Library Japanese Information Service.

Table 5-4 List of Reports Presented at the First Annual Conference, the European Association of Japanese Resource Specialists (EAJRS)

Report	Title
Dr. Gordon Daniels, University of Sheffield	Monitoring contemporary European writing on Japan
Dr. Anton Dolin, Oriental Institute of the USSR Academy of Sciences	Japanese collections in the academic research of Soviet Japanologists
Dr. Olga Moroshkina, Institute for Scientific Information in Social Sciences	Japanese collections on social sciences of the Institute for Scientific Information in Social Sciences of the USSR Academy of Sciences
Dr. Libuse Bohackova, Naprstek Museum, Prague	Japanese art collections in Czechoslovakia
Dr. Helena Honcoopova	Collections of antiquarian Japanese books in Czechoslovakia
Dr. Kata Kabelacova Oriental Institute, Prague	Library and document collections of Japanese materials in Czechoslovakia
Dr. Eva Apor, Library, Hungarian Academy of Sciences	Japanese collections in Hungary
Mr. Kenji Niki, Columbia University; Ms. Mihoko Miki, University of California; Ms. Yasuko Makino, University of Illinois	Japanese librarianship in the United States
Dr. Norbert Adami, German Institute for Japanese Studies	Japanese resources in Europe as seen from Japan - a personal view
Dr. Alfons Dufey, Bavarian State Library	CJK computer projects in the East Asian Department of the Bavarian State Library
Ms. Satomi Nakatsuka, International Research Center for Japanese Studies, Kyoto	A "Who's who" database for Japanese studies
Dr. Yoshihiko Ohno, International Research Center for Japanese Studies, Kyoto	Japanese character computer input - a new approach
Prof. Masamitsu Negishi, National Center for Science Information Systems	NACSIS-CAT: features for users, database organization and current status
Ms. Shirley King, British Library Japanese Information Service	The Union Catalogue pilot project: history and aims
Mr. Noboru Koyama, Cambridge University Library	The Union Catalogue pilot project: future developments
Mr. Kunishiko Shimada, National Diet Library	The present state of JAPAN/MARC and future plans
Mr. Akiyoshi Kamiyama, Diplomatic Record Office, Tokyo	The collections and activities of the Gaikou Shiryoukan
Dr. Peter Kornicki, University of Cambridge	The Union Catalogue of early Japanese books in Europe: progress and finds

Source: Program of EAJRS, September 1990

VI. REGIONAL DATABASE DEVELOPMENT

1. Steady Population Surge toward the Tokyo Area

People gather around information, and information grows where people gather together. The information gap between Tokyo and regional areas, caused by overconcentration in Tokyo far exceeds the population ratio.

According to a preliminary population census in Japan, the population of the Metropolitan area (Tokyo, Chiba, Saitama, Kanagawa) was 31,796,197 as of 1990, 25.7% of the total population. An information distribution census carried out by the Ministry of Posts and Telecommunications indicates that the gross supply of 42 kinds of information (post, telephone, TV, newspapers, conversation, etc.) for the Tokyo area runs up to 34.9% of the 1987 total. The reason for the accelerated concentration is that information source entities, such as national administrative agencies, corporate headquarters, universities, and laboratories are centered in Tokyo. This trend is more noticeable in new fields, such as data communication.

The preliminary count of population census in Japan reports a total population of 123,611,541, equivalent to a 2.1% increase since 1985. A substantial population growth is observed in three prefectures; Saitama (a 9.2% increase since 1985), Chiba (a 7.9% increase), and Kanagawa (a 7.4% increase). Tokyo showed a population increase of 0.2%. On the contrary, as many as 18 prefectures suffered a population decrease. 11 prefectures show a decrease of more than 1% since 1985. These including Aomori, Akita, Nagasaki, Kochi, Yamaguchi, and Shimane. In this way, the tendency of overconcentration in the Tokyo area is evident.

2. Tokyo Holds 80% of Total Database Sales

Among information industries, the database service industry has concentrated and increased in the Tokyo area along with the population and the number of company headquarters. The Tokyo area also has augmented functions as an international financial and information center. In particular, the database industry is in the process of maturing when seen from a national viewpoint, and is now actively engaging in commercialization while centering around Tokyo information.

According to the MITI "Survey of Selected Services Industries," the database service industry consisted of 328 companies in 1989, and total sales were ¥157.62 billion. These figures correspond to the 21.9% increase from 1988 in number of companies and the 48.3% sales increase. Most characteristic is that the Tokyo area, which occupies 42.1% (138 companies) of the total number of companies, achieved a high 83.9% (¥132.180 billion) of the total sales. This degree of centralization has not changed much since 1985.

Table 6-1 No. of Companies and Sales (1989) of Database Services, and the Ratio of Passwords

(Unit: Million yen)

	① Companies		② Sales		③ Sales per company	④ Ratio of passwords (%)
	No. of companies	Ratio (%)	Sum	Ratio (%)		
Hokkaido	14	4.3	1,914	1.2	136	2.7
Tohoku,	14	4.3	762	0.5	54	3.2
Miyagi	5	1.5	497	0.3	99	0.6
Kanto,	166	50.6	135,431	85.9	815	61.2
Tokyo	138	42.1	132,180	83.9	958	49.0
Kanagawa	15	4.6	2,422	1.5	161	5.8
Chubu	35	10.7	4,542	2.9	130	8.1
Aichi	29	8.8	3,509	2.2	121	4.1
Kinki	52	15.9	11,294	7.2	217	16.3
Osaka	40	12.2	10,922	6.9	273	12.0
Hyogo	5	1.5	234	0.1	47	2.5
Chugoku	19	5.8	1,823	1.1	96	2.8
Hiroshima	9	2.7	979	0.6	109	1.0
Shikoku	13	4.0	807	0.5	62	1.2
Kagawa	6	1.8	197	0.1	33	0.3
Kyushu	15	4.6	1,047	0.7	70	4.5
Fukuoka	9	2.7	748	0.5	83	2.3
Total	328	100.0	157,620	100.0	481	100.0

Note 1) : Classification of regional blocks
Tohoku : Aomori, Iwate, Miyagi, Akita, Yamagata, Fukushima, Niigata
Kanto : Ibaragi, Tochigi, Gunma, Saitama, Chiba, Kanagawa, Yamanashi, Tokyo
Chubu : Toyama, Ishikawa, Fukui, Nagano, Gifu, Shizuoka, Aichi, Mie
Kinki : Shiga, Kyoto, Osaka, Hyogo, Nara, Wakayama
Chugoku : Shimane, Tottori, Okayama, Hiroshima, Yamaguchi
Shikoku : Tokushima, Kagawa, Ehime, Kochi
Kyushu : Fukuoka, Saga, Nagasaki, Kumamoto, Ohita, Miyazaki, Kagoshima, Okinawa
Note 2) : Aggregate for the item "Database" of the report of the "Survey of Selected Service Industries," MITI for ①, ②, and ③. (Data as of 1989)
Note 3) : Calculated on the basis of passwords of TEIKOKU DATABANK and NIKKEI TELECOM for ④. (As of October, 1990)

On a national average, sales per company are an annual ¥480 million (¥395 million in 1988), equivalent to a 21.5% growth from the previous year. In the Tokyo area, sales per company run up to ¥958 million (up from ¥835 million the previous year), about twice the national average and a 14.7% increase from the previous year. The database industry in prefectures other than Tokyo is very different; there are only 190 companies, and the sales are ¥25.44 billion. Sales per company are only ¥134 million, that is, 1/7 of that of companies in Tokyo.

3. Upward Trend in Regional Areas

Though the database industry tends to concentrate in Tokyo, the growth rate in prefectures other than Tokyo is considerable. As of 1989, the number of companies showed a 20.3% increase from the previous year while sales showed a substantial increase, 87.2%. Sales per company grew by 54.7%. This data supports the fact that the database service in regional areas actively uses PC network service, videotex, VAN, and other information transmission tools. Most of these services, however, stay at the advance investment stage, since business is limited to the region, or the service cannot yet be provided nationwide.

Setting up "Tokyo vs Regional areas" also corresponds to a sphere of influence of the database service industry. From an information supplier point of view, the percentage of transmitting information from Tokyo to regional areas is very high. JOIS, the database of the Japan Information Center of Science and Technology, PATOLIS of the Japan Patent Information

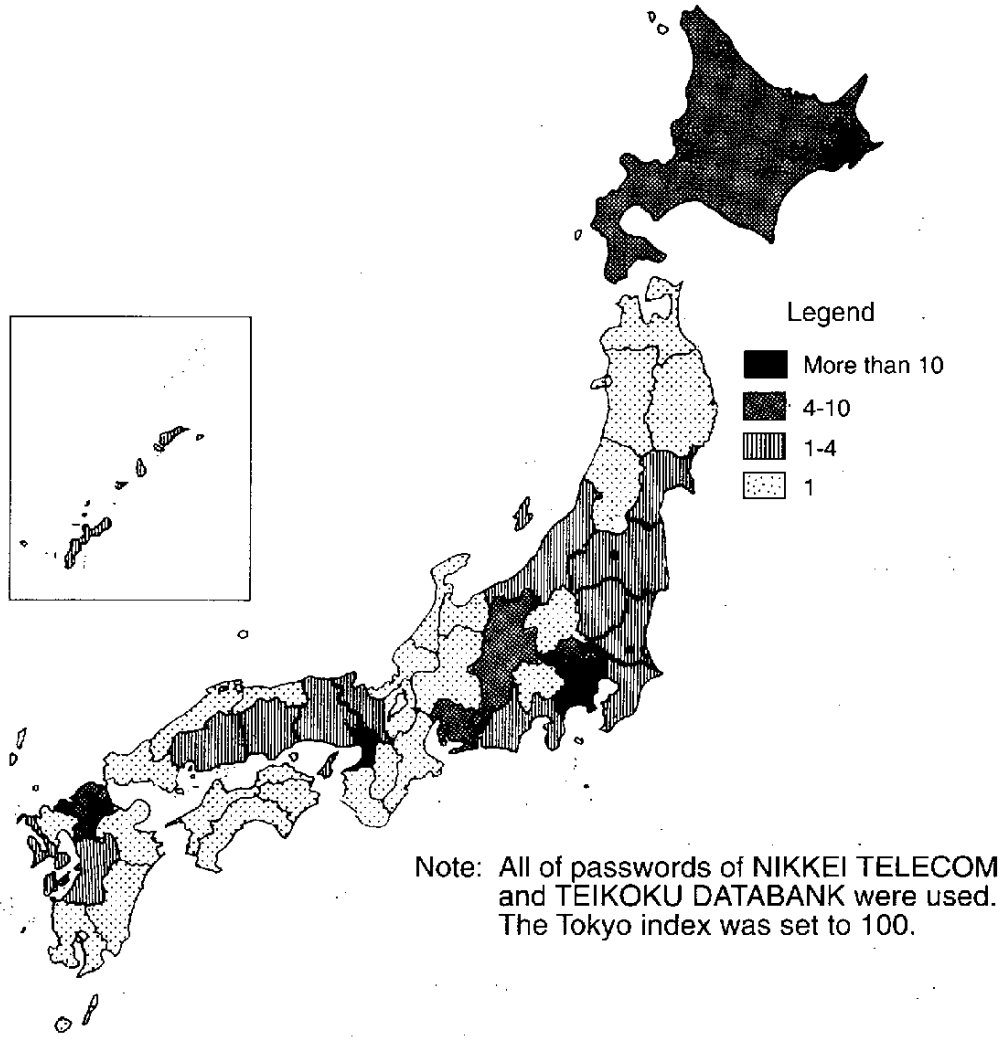


Figure 6-1 Regional Database Gap Index

Organization, SMIRS of the Japan Small Business Corporation, and other databases on magazines, central agencies, and newspapers are growing. On the other hand, in regional areas, widespread and regional newspapers are attempting to supply information oriented to regional characteristics. The Chunichi Shimbun now offers its own database service, while the Shizuoka Shimbun, Kumamoto Nichinichi Shimbun, the Nishi-Nippon Shimbun, and Minami Nippon Shimbun load unique regional information from the databases of Kyodo News Service and Nihon Keizai Shimbun.

The Hokkaido Shimbun and the Chugoku Shimbun are also eager to develop and put the new media into practical use. Some think that once the database service supplied by newspapers is full-fledged, their networks will transmit regional information to the center, thereby correcting the information gap. Similarly, homogenization of databases supplied by local governments, and third-sector company active information exchange between Tokyo and regional areas, may be possible.

4. Nationwide Information Needs

Let us look at the state of information demand under the circumstance where the information source is concentrated to Tokyo. Referring to the ratio of passwords by prefecture of COSMOSNET (TEIKOKU DATABANK, LTD.) and NIKKEI TELECOM (Nihon Keizai Shimbun, Inc.), national distribution shows Tokyo at 49.0%, far lower than the sales ratio, 83.9%. This password ratio shows the trend of information needs. Though the database sales in the Tokyo area occupies 80% of the whole nation, the distribution ratio of passwords on the demand side remains less than 50%.

A trend that can be observed recently is the nationwide spreading of information demand. Though the distribution ratio of passwords in the Kanto district is as high as 61.2% and the sales ratio of the database service industry is 85.9%, blocks other than the Kanto area show an overwhelmingly high ratio of information needs for database supply: 16.3% (7.2% for sales) in Kinki, 8.1% (2.9%) in Chubu, 2.8% (1.1%) in Chugoku, and 2.7% (1.2%) in Hokkaido.

5. Future Issues

The "upward information" flow from regional areas to Tokyo remains a trickle compared to the "downward information" flow from Tokyo to regional areas. To narrow this information gap is essential to regional areas. In particular, a lot of regional information is diversified and vital, while information transmitted from Tokyo tends to be uniform. Once databases are established in regional areas and connected via communication network, regional information will surely prove helpful for company activities and local government policies.

In a society of highly advanced information, most up-to-date technologies have been developed in terms of hardware. However, a delay can be observed in database production which is a key to advanced technologies, and in the promotion of use of technologies available, particularly in regional areas. Local governments are now in the process of producing databases, which should be used as a breakthrough to enhance information center functions. It is necessary for local governments to define scopes of information available for supply, and to establish systems enabling search via nationwide networks, as well as letting people know how useful databases can be. Among other things, this requires support from many levels of administration.

On the other hand, there are information cities designated by the government, including 79 New Media Communities, 70 Teletopias, and 53 Intelligent Cities. These cities will prove to be an effective means to improve and expand the information infrastructure. The Saitama prefectural authorities will investigate development possibilities for the area around Musashi Urawa Station of the East Japan Railway Company in Urawa City, concerning the construction of an intelligent city. The authorities will establish the "Experimental City Urawa Working Group" in conjunction with private companies for specific undertakings. Though taking time for advance investment, improvement and expansion of the information infrastructure is an essential prerequisite to promote information from and in regional areas. Regional areas are demanded to put national policies into practical application.

Apart from the above, the varying charges for communication between areas will present problems for data exchange. Transmission of regional information or receiving of central information, if done via public network, will be costly, which hampers database utilization. Correction of cost variations according to distance is an issue which must be solved by the whole industry.

VII. THE POLICY OF DATABASE PROMOTION

1. Ministry of International Trade and Industry (MITI)

1.1 Promotion of Database-related Industries

(1) Overall Database Improvement Measures

The database industry is a vital column to support the highly advanced information society, and introduction of databases is currently being promoted in various fields. It is necessary, however, to continue effective research on production and utilization of databases, in a true sense of the word. In line with the internationalization of Japanese economy and society, it is also necessary to promote information exchange with foreign countries.

Accordingly, MITI is taking overall information and expansion measures for databases through the policies described below. MITI is also surveying new trends of diversifying electronic information services via variation of distribution systems and media.

(2) Promotion of Production of Important Databases

The type of databases listed below are considered important for the development of the Japanese economy. Production of these databases should be promoted actively through coordination between industries and the government.

1. Databases which comprehensively collect fundamental data necessary for future growth of industrial and social activities, and which can produce new resources for industrial and social activities
2. Databases which can be widely supplied to the industrial society
3. Databases which are strategic from an international viewpoint, that is, unique to Japan and highly evaluated internationally
4. Databases whose production are highly required society, but are difficult to achieve smoothly by the private sector due to many uncertainty factors in terms of information contents, specific supply pattern needs, raw information collection systems, and the technical capacity of the system itself.

A few subjects are chosen every year for the databases listed in Table 7-1 which are assumed to be important databases, and the feasibility of important database development is studied for the production of such databases.

Development of important databases has been researched on 21 themes since the start in 1986. Four themes were investigated in 1986, five in 1987, and four in 1988, and four in 1989. For the year 1990, four themes have been highlighted and the survey has just been concluded. Among the themes already surveyed, the JAN Item Code File Service from the Distribution Systems Research Institute, have already been put into service.

Table 7-1 List of Critical Database Development Programs in 1990

	Name of theme	General description
1990 F.Y.	Fuzzy Reference Database System (Laboratory for International Fuzzy Enginnering Research)	Production and research of a database which collects literature information concerning fuzzy theory and application comprehensively, and rearranges/accumulates information for adequate application of information
	Music Enterprise and Artist Database (Japan Association of Music Enterprise)	Research for databasing through collection and accumulation of information concerning musical pieces, for the purpose of copyright protection and recognition
	Database of Cleaner Technology (Industrial Pollution Control Association of Japan)	Research to produce a database on production technologies with low pollution, selected among production technologies in various industrial fields, and those considered to be useful in developing countries
	Governmental (Administrative) Information Database (Institute for Dissemination and Research of Government Data)	Research to create and supply databases which collect and summarize various research/study reports issued from governmental and related agencies (reports with hard-to-grasp contents

(3) Support of the Development of Efficient Database Operation

Most databases currently distributed are offered through independent services, which is one of factors hampering user availability. This is also considered a problem hindering market expansion.

From this point of view, capital subscription will be submitted to the Information Technology Promotion Agency, Japan (IPA),.for program development to support efficient operation of databases, thereby eliminating the above problems.

(4) Various Research to Improve and Promote Databases

Research on database/information services will be made to study both user and supplier needs concerning database and other information services, as well as to review future problems related to those services. This research was started in 1984.

(5) Research and Development of Database Interoperability System

This project is intended to develop a system which allows sharing of large distribution databases of different models and framework to enable handling of multi-media information (characters, graphics, images, voices). This project is aimed at establishing a technical infrastructure of the highly advanced information society after the 1990s.

Specifically, this project involves active promotion of research and development of multi-media technology, distributed database technology, high reliability technology, and an overall system under cooperation of industries, academy, and official authorities.

The purposes of the research and development of this system technology are as follows:

1. Securing interoperability of information equipment and systems to increase user options of equipment selection as well as preventing unnecessary overlap investment
2. Taking leading role in the future development of information systems to enhance the technical level as well as to alleviate the gigantic burden of total system development
3. Contributing to progress of worldwide information through reflecting to international standards

(6) Production of Public Databases and Expansion of Government-owned Data Supply to the Private Sector

Production of public databases is necessary for the promotion of trade and industry administration, such as technology databases related to official research, economy databases viewed by country, and databases related to small and medium-size companies.

Apart from the above, supply of these databases to the private sector will be expanded and various statistical government-owned data, etc. will be increasingly supplied in the form of magnetic tapes readily applicable in the private sector. Improvement of supply conditions, etc. is also planned.

1.2 Promotion of Regional Databases

(1) New Media Community Concept

The new media community concept involves construction of various model information systems, which respond to industrial, social, and living needs in a regional community. Evaluations of convenience, economy, and effect on the industry and society are made through operation of these model systems. Also planned is the spreading of information systems through construction and operation, which is a result of application and development of the model information system. Improvement and expansion of the infrastructure is done through promotion of this concept. It is expected that this concept will contribute greatly to the realization of highly advanced information communities, while it helps to construct a network constituting the infrastructure of a highly advanced information society. This will result in activation and level-up of the regional economy and society.

Three designated development regions (Inawashiro, Bandai, and Kitashiohara in Fukushima Prefecture, Shizuoka in Shizuoka Prefecture, and Shiozawa in Niigata Prefecture) were selected in 1990, making it a total of 81 regions.

(2) Financial Support for System Construction

1. Capital subscription system

   Capital subscription from Japan Key Technology Center

   The Center will provide financial support for business organizations (joint capital corporations of stock company type).

Capital subscription from Japan Development Bank and Hokkaido-Tohoku Development Corporation

The Japan Development Bank and Hokkaido-Tohoku Development Corporation will provide financial support for corporation which improve and expand the new media center (facilities which act as nuclei of regional information system satisfactory to certain requirements specified in the Private Sector Activation Act)

2. Financing

Interest-free financing utilizing profit of sales of government-owned shares NTT

Interest-free financing will be applied via the Japan Development Bank and the Hokkaido-Tohoku Development Corporation for third-sector corporations which promote the new media community concept.

Special-interest financing via the Government Financial Institute

- The Japan Development Bank, Information promotion frame
- Hokkaido-Tohoku Development Corporation, Regional information promotion frame
- Loans related to small and medium-size companies

3. Incentives in terms of taxes

Regional information promotion tax system

For corporations which suffer expenses for job execution in the promotion of the new media community concept (public utility corporates, etc.), such expenses may be tax declared as loss.

Taxes for information infrastructure

Incentives (special redemption, fixed asset taxes) will be approved to third-sector corporations which undertake improvement and expansion of the new media center project.

1.3 International Compatibility of Databases

The importance of databases has recently become accentuated in Japan. However, according to the MITI "Database Directory", 69% of all databases are foreign: that is, database distribution in Japan indicates an excess of imports.

On the other hand, there is an increasing overseas demand for supply of Japanese databases in foreign countries. In view of the vagueness of overseas database markets, the high translation costs, and the lack of well-established distribution and sales support systems, the supply of Japanese databases in foreign countries has not made much progress.

To correct this unbalance and to meet overseas needs, research will be made on promotion of database production for overseas markets and improvement of overseas distribution systems, to achieve an internationalization of Japanese databases. This research was started in 1989, con- with attention focused on research of needs and seeds in foreign countries.

1.4 Systems related to Databases

(1) Tax Measures for Database Producers

Databases require gigantic initial investments for production, and the investment period extends over a long period. Besides, data becomes absolete within a short period, requiring updates and additions. Therefore, the financial burden for database production is heavy.

The Database Reserve Fund was established in 1987 to alleviate this.

In this system, a corporate or individual who produce a database for general use will have 10% of the sales set aside as a reserve to accommodate expected future database development costs. After being deferred for four years, the reserve may be disposed evenly over four years and tax declared as loss.

To utilize this system, the corporate or individual has to apply to MITI to obtain approval that the database is produced by the corporate or individual. Then, the corporate or individual reports to the tax office, while presenting the approval.

(2) Private Support to Production of Database

As private sector support of database production, the subscription system of Japan Development Bank and a low-interest financing system are provided.

This system consists of capital subscription from the Japan Development Bank to a corporation which produces a database necessary for future development of industrial and social activities.

Japan Development Bank will also provide low-interest financing for equipment and non-equipment funds to those producing a database for the private sector.

(3) Execution of Database Directory Systems

In the present state with a flood of information, database service allows social sharing of information and efficient access to useful information, thereby supporting avoidance overlap investments to obtain information, promotion of information of the economy and society, and enhancement of the performance of industrial and social activities.

However, the contents of database service is not yet thoroughly known in Japan. The Database Directory System established in September, 1982, was a means for a breakthrough in the present situation.

In this system, database directory schedules describing the outline of databases, utilization method, etc. are prepared on the basis of the application presented from database service companies. This is offered for public use, to spread database services.

The database directory can be accessed from the National Diet Library, Regional Bureaus of International Trade and Industry, and the major Chamber of Commerce and Industry.

Since 1987, "Database Directories", provided on floppy disk, has been published by DPC, contributing to the enhancement of database services in Japan.

(4) Information Distribution for Small and Medium-size Companies

The database for small and medium-size companies called Small and Medium-size Companies Information Research System will be improved and expanded to achieve quantitative improvement of the small and medium-size companies information network (SMIRS), connecting the Japan Small Business Corporation and regional information centers for small and medium-size companies. This is to ensure rapid and efficient information supply to small and medium-size companies.

1. Small and medium-size companies information center

   This center undertakes collection, analysis, and generation of management and technology information needed by small and medium-size companies and puts it all into SMIRS in a form convenient to these companies. The information is supplied to small and medium-size companies in regions through a regional small and medium-size companies information center.

2. Regional information center for small and medium-size companies

   The center collects and generates information for regional small and medium-size companies to promote production of databases unique to a region. On the other hand, the center receives information from the small and medium-size companies center to undertake delegated research to provide information in a form readily understandable to small and medium-size companies.

3. Small and medium-size companies information network system

   The computer network, centering around SMIRS production by Japan Small Business Corporation and small and medium-size company regional information centers enhances joint utilization of SMIRS and small and medium-size company regional information centers, enabling rapid and efficient information supply necessary for small and medium-size companies.

2. Management and Coordination Agency

The "Basic Plan for Establishing Databases within the Government" was agreed upon in December of 1987 at the Inter-Ministerial Council on Government Information Systems. This basic plan shows the conception, objectives, and measures for the development and improvement of database production.

The establishment of a government information system through the "Cabinet Decision on Action Programs for Promoting Administrative Reforms to be accomplished in 1991" states that, in accordance with the basic plan for the production and improvement, these databases are to be shared among ministries via PC network service. It also decided to promote policies of government profile, and to introduce and utilize Open System Interconnection (OSI). OSI is being designated as an international standard protocol, and its purpose is to promote a network of non-comparible computers.

Furthermore, digital data collected via magnetic tapes and maintained by each ministry are of great use to private sectors. Their distribution to private sectors has also been required for a long time. Therefore, on April 17, 1985 the Statistical Council drew up an outline of the production for "Dissemination of Statistical Data on Magnetic Tape for use in the Private Sector" was established. Having obtained the agreement from each of the related ministries, on May 28, 1985, a notification was given to each ministry to this effect. On February 9, 1990, an outline of the provision was drawn up, and March 1, 1990, the notification was given to all governors as well as the directors of each ministry responsible for statistical activities.

3. National Land Agency

The National Land Agency is promoting a project called the Information System Project for Land Reclamation in cooperation with related ministries: The project deals with:

(1) Improvement of digital and image information

(2) Development of a system called Information System for the Utilization and Management of Land Information (ISLAND) for the purpose of effective data utilization

(3) Promotion of utilization and application of updates

(4) Conductance of research and studies required to perform the above three projects

The information updated by the Project to Construct National Land Information System is classified into the following:

(1) Numerical Land Information

(2) Land Image Information

(3) Other Administrative Land Information

Numerical Land Information includes, in the form of magnetic tapes, information on various natural conditions, the situation of land utilization, and areas under legal control.

This numerical information adopts "Standard Regional Mesh" and keeps the information flow intensive through combination of mesh information, indicating characters within a specific mesh, and coordinating information by pointing out cities, towns, villages, and water systems.

Image Land Information contains 390,000 sheets of color aerial photographs of national land all over the country, and 1,300 sheets of Land Use Maps on a scale of 1:25,000, showing land utilization and other information.

Unitarily, in the form of database, ISLAND controls various areal data which consists of meshes, coordinates, cities, wards, towns, and villages.

Its application functions include search, processing, and analysis of support systems and map search indication subsystems, and can process, search, indicate, and run statistics on various data through simple commands. The data can be output in the form of books, zone maps, and mesh maps. XY plotters can handle color graphic display, if so desired.

4. Ministry of Education, Science and Culture

The Ministry of Science Education, Science, and Culture actively promotes the production of databases for science, lifelong education, educational literature, on the basis of the proposals of the 16th report of the Council for Science and Technology, of the report of the Provisional Council on the Promotion of Administrative Reform, and of the report of the National Council on Educational Reform.

With reference to science information, the National Center for Science Information System (NACSIS) and domestic universities are producing databases. Grant-in-Aid for Scientific Research is given to fields where databases are greatly needed but are not sufficiently provided, to fields where Japan plays a major role in research and in information, and also to subjects intended for public utilization, and support is given to academic circles and groups of scientists in database production.

Regarding lifelong education, since 1987, regional authorities have been working as one body in developing a network based on databases for lifelong education, and perform aid projects to improve provision of information of lifelong education and consulting systems for the residents.

Regarding improvements of the infrastructure for database distribution, improvements of science information networks, campus information networks, and university information processing centers, computerization of library work is being promoted. Fostering of software and hardware engineers, and also of specialists with a high level of ability within the information and other specialized fields, is being discussed.

The National Institute for Educational Research, the National Education Center, and the National Women's Education Center are producing various types of databases for information related to their needs. They are offered both online and offline.

5. Ministry of Posts and Telecommunications

The Ministry of Posts and Telecommunications carries out various policies, such as improvement of information infrastructure, offering financial investment and loans to the private sector, and promoting information communication to regional areas, for the purpose of expanding database markets.

Telematique International Research Laboratories, established in 1987, financed by the Japan Key Technology Center which is controlled by the Ministry of Posts and Telecommunications, are conducting research and development for the purpose of creating electronic filing systems for books and publications. They also make it possible for common users to easily utilize the Telematique Library, which is an accumulation of electronic filing systems, observing them as our cultural and economic assets and maintaining harmony within future communication networks.

Since the Teletopia Plan proposal made in July, 1983, a comprehensive policy to promote regional societies by utilizing new media such as CATV, Vidotex, and data communication, the development of a regional information society has been actively developed.

Since their first designation model area was established in March 1985, the number of designated model areas reached 78, as of October 1990.

In accordance with the advice of the International Geographical Year Special Committee, World Data Centers were established in five countries: Japan, the U.S., the Soviet Union, Great Britain, and the Republic of China, for the purpose of promoting distribution and utilization of data obtained through joint observation. The Communications Research Laboratory of Ministry of Posts and Telecommunications established a World Data Centers regarding the ionosphere in 1958, and are conducting exchange of data with other World Data Centers. They also provide data to other research institutes and universities.

At a low interest rate, they also finance through the Japan Development Bank to the Type II Telecommunication Business, for equipment purchases, including software for distribution of online database.

6. Local Governments

The "Survey of the utilization of computers in local government", conducted by the Ministry of Home Affairs as of April 1, 1990, shows that 45 local governments are utilizing databases in some of their administrative services. Types of databases usage, include the ones to be used for specific and general services with an accumulation of various information.

411 systems of databases for specific services are being used by 44 organizations as follows.

Taxation	30 organizations
Environmental Pollution	28 organizations
Civil Engineering and Construction	27 organizations
Public Welfare, Labor, Hygiene and Hospital	26 organizations

27 database systems for general purposes are being utilized by 24 organizations and their accumulated data cover census, land utilization, mining and manufacturing industry, economic data for business, medical services, and social welfare, and are registered in most systems.

In the case of regional areas, 1,550 organizations, or 48% of the total, are using databases in some of their works. The ratios of utilization in regional areas are as follows:

Designated cities, special wards	100%
Cities other than designated cities	78.0% (502 organizations)
Towns and villages	39.7% (1,014 organizations)

Current database system processing is as follows:

Resident registration	1,301 organizations (40.3% of all the organizations using computers)
Taxation	1,081 organizations (33.5% same as above)
National Health Insurance Tax	963 organizations (29.8% same as above)
National Pension	960 organizations (29.7% same as above)

In the Resident Records, data such as the mentioned items in the resident basic ledger, are being promoted and in the area related to hospitals, preparation of receipts, clinical examination, and in water supply and drainage, levying is being made through database service.

Appendix-1 Japanese Databases Accessible Overseas

Format: O : OnLine
M : MT, FD
C : CD-ROM, CD-I

Language: J : Japanese
E : English
O : Others

Company Name	Database	Description of Database	Language	Format	TEL. No.
Asahi Shimbun Publishing Company	ANS	Articles from Asahi Evening News and Asahi Shimbun	E	O	03-3545-0131
	ASAHI NEWS SERVICE	Collection of articles translated into English from the Asahi Shimbun with those originally written in English	E	O	
	HIASK	Collection of all the Asahi Shimbun articles except for sport pages	J	O/M/C	
Asia Data Research, Inc. (ADR)	South East Asian Sales Trend Market Research	Research into retail sales of cameras and home electric appliances in South East Asia	J/E	M	03-3352-6215
AT & T Jens	NIFTY-Serve CompuServe		J/E	O	03-5561-3411
Chemical Data Service Incorporated (CDS)	CD-NET	Comprehensive information for chemical industry	J	O	03-3536-1201
COMLINE International Corporation (COMLINE)	Asahi Online Database	Collection of articles from the Asahi Shimbun and the Asahi Evening News	E	O	03-3486-0696
	BioWorld Online	Online version of bio-industrial newspaper published by BioWorld	E	O	
	COMLINE Business Analysis	Identifies and analyzes Japan's technological developments and their impact on business	E	O/M/C	
	COMLINE Industrial Monitor	News from Japan's industrial and government sectors, focused on high technology	E	O/M/C	
	Tokyo Financial Wire	Financial, economic, industrial, and corporate news	E	O/M/C	
	USIA Wireless File	News released from USIA	E	O	
The Daily Industrial News, LTD.	The Daily Industrial New Information Database	Collection of articles form the Daily Industrial News	J	O	
Daiwa Institute of Research Ltd. (DIR)	S File	Data on Japanese and foreign economics. Industry and financial/stock market	O	O	
Dataquest	DQ MONDAY	Price and industrial trends for semiconductors	E	O	
Dataquest Japan Limited (DQ Japan)	Online Information on Semiconductor	Prices, lead-time information, pricing trend analysis, and market intelligence	E	O	03-3546-3191
Dun & Bradstreet Business Information Service Japan (K. K.) (D & B)	Duns Direct Access	List of business information of selected companies based on user profile	E	O/M	
	DunsPrint	Business information reports of 17 million companies worldwide	E	O	
EDUCA Inc. (EDUCA)	Glorier Encyclopedia	Japanese version of Glorier Encyclopedia	J	O	03-3352-8611
Electronic Library Incorporated (EL)	ELENT	Collection of articles from 37 newspapers and about 140 magazines	J	O	03-3779-1211

Company Name	Database	Description of Database	Language	Format	TEL. No.
Fuji Xerox Co., Ltd.	Japan Technology	English abstracts of Japanese scientific and technical journal articles	E	O/M	
G-SEARCH Corporation	AERA Database	Collection of all articles from weekly magazine "AERA"	J	O	
	Asahi Shimbun Database	Collection of almost all articles from Asahi Shimbun	J	O	
	Asahi Shimbun Evening Online	News-flash of Asahi Shimbun Evening Version	J	O	
	Asia Newsflash Service	News-flash of Asia Business Information	J	O	
	Atomic Code Information Database	Information on Japanese nuclear reactors and atomic code	J	O	
	BOOK	Information on the contents of books published in Japan	J	O	
	BOOK/ MONTHLY	Monthly revision of new information from "BOOK"	J	O	
	CD New Score Information	Information on newly published and forthcoming CD	J	O	
	Database Directory	Description of databases available in Japan	J	O	
	Fashion Information	Explanation of technical terms, brand information and trends from department stores	J	O	
	I-N Industrial Statistics	Production, shipment/stock data and trade information for 39 industries	J	O	
	Industrial and Technical Information on China	Major articles related to industry and technology from Chinese newspapers	J	O	
	Industrial News	News-release from companies, governments and related organizations	J	O	
	Information Newsboard on Asian Countries	Micro-business information of Asian countries	J	O	
	Intellect	Judicial precedents and laws on intellectual properties	J	O	
	JETRO ACE	Collection of reports and other materials from 80 overseas points of JETRO	J	O	
	Kyodo News Linkage Database	Collection of articles from Kyodo News linkage newspapers	J	O	
	MAGAZINE	Articles from 1,300 magazines published in Japan	J	O	
	Mainichi Shimbun Database	Collection of major articles from the Mainichi Shimbun	J	O	
	Major Economic Indices	Numerical data on national income consumer price and other indicators	J	O	
	MANAGEMENT	On-line version of the encyclopedia of management business "Gendai Business Taikei"	J	O	

Company Name	Database	Description of Database	Language	Format	TEL. No.
G-SEARCH Corporation	Market Search	Reference to the marketing research into all industries in Japan	J	O	
	Medical and Pharmaceutical Database	Pharmaceutical information from attached documents and urgent news	J	O	
	Music CD Catalog	Bibliographic and price information with critics for music CD	J	O	
	Nikkan Kogyo Shimbun Database	Collection of articles on new products and technology from Nikkan Kogyo Shimbun	J	O	
	PRIZE	Information on prize-winners and prizes in Japan	J	O	
	Techno-Search	Abstracts of articles on new products and new business development from five newspapers	J	O	
	Teikoku Databank Company Financial Information	Financial data on 250,000 firms in Japan	J	O	
	Teikoku Databank Company Information	Summarized data on 900,000 firms in Japan	J	O	
	Title Search	Table of contents of industrial and technological magazines issued in Japan	J	O	
	Toyo Keizai Company Information	Detailed information on Japanese listed companies and foreign owned companies	J	O	
	TSR Company Financial Information	Financial data on 50,000 Japanese companies	J	O	
	TSR Company Information	Summarized data on 500,000 Japanese companies	J	O	
	WHO	Personal information on those extracted from newspapers, magazines, and books published in Japan	J	O	
	Yomiuri Shimbun Database	Collection of almost all the articles from Yomiuri Shimbun and Yomiuri Katei Shimbun	J	O	
HAL INFORMATION SERVICE CO., LTD.	HAL-FRIEND	Life related information of Tokyo Metropolitan Area	J	M	
The Industrial Bank of Japan, Ltd (I. B. J.)	IBJ Financial Data	Financial data on main companies in Japan	E	M	03-3214-1111
Information Service International-Dentsu, Ltd. (ISID)	Jiji Securities	Data on stocks and bonds listed on the Tokyo and Osaka exchanges	E	O	
	Jiji Stock Price	Lists of prices for all issues on the TSE first section. Osaka first and second section, and other daily prices	E	O	
INTEC Inc.	Investment Data System	Security data in Japan, for overseas Japanese security-firms and their customers	E	A	03-3292-2921
INTERACTIVE DATA CORPORATION TOKYO BRANCH (IDC)	NRI/E	Macro-economic, financial, and industrial data in Japan	E	D	

Company Name	Database	Description of Database	Language	Format	TEL. No.
International Trade and Industry Research Institute	Commerce Statistics Table	Japanese commerce statistics from MITI	J	M	
	Input-Output Table	Input-Output Table from MITI	J	M	
	Manufacturing Statistics Table	Japanese manufacturing statistics from MITI	J	M	
Japan Association for International Chemical Information (JAICI)	CHEM-J	Bibliographic information of chemical literature	E	M	
	NQRS (Nuclear Quadruple Resonance) database	Worldwide literature on NORS and NQR	E	M	
	QCLDB	International literature on quantum chemistry abinitio calculation	E	M	
The Japan Audit Bureau of Circulations (JABC)	ABC Data Online Service	Circulation data on journals and newspapers	E	M M	
JAPAN CHEMICAL INDUSTRY ECOLOGY-TOXICOLOGY & INFORMATION CENTER (JETOC)	JETOC/KASHIN	Inventory of existing chemical substance in "Chemical Substance Control Law" in Japan	J	M	
JAPAN MACHINERY DESIGN CENTER (JMDC)	Information Retrieval for Trademarks, Japan and Abroad	Information retrieval system for trademarks, Japan and abroad	J/P		03-3582-6221
Japan Food Industry Center (JAFIC)	Food Industry Information File	Bibliographic data for technologies of food industries, Japan and abroad	J	O	03-3591-7451
The Japan Information Center of science and Technology (JICST)	JOIS				03-3581-6411
	JICST File on Current Science and Technology Research in Japan	Research information files on research projects, planning and ongoing in Japan	J	O	
	JICST File on Medical Science in Japan	Literature on medical science in Japan (integrated with Japan medical Abstracts by JAMAS)	J	O	
	JICST File on Science and Technology	Literature on science and technology, collected from scholarly journals, proceedings, technical notes and others in 50 countries.	J	O	
	JICST File on Science, Technology and Medicine in Japan (in English)	English translations of articles on science, technology and medicine in JICST File on Science and Technology, and JICST File on Medical Science in Japan	E	O	
	JICST Holding List File	Information on JICST library resources	J	O	
	Nikkan Kogyo File on New Technology and Products in Japan	Database of the Nikkan Kogyo Shimbun (industrial newspaper)	J	O	

Company Name	Database	Description of Database	Language	Format	TEL. No.
The Japan Information Center of Science and Technology (JICST)	STN				
	CABA	Worldwide database of agricultural and related literature, after 1973	E	O	
	FSTA	Bibliographic database containing the literature in food science and food industry in general	E	O	
	JGRIP	Data on research being carried out at public-owned research institutes in Japan	E	O	
	JICST-E	Comprehensive Japanese literature relating to science, technology and medicine	E	O	
	MEDLINE	Worldwide database of medical literature produced National Library of Medicine	E	O	
Japan Medical Abstracts Society (JAMAS)	JMED (JAMAS' part)	Secondary literature for medical information	J/E	O	03-3334-7625
Japan Patent Information Organization (JAPIO)	Design	Bibliographic information of registered design in Japan	J	O	
	INPADOC	Bibliographic information of patents published by 53 countries	E/O	O	
	Japan Patent	Bibliographic information with some abstracts and drawings of published or public patents in Japan	J	O	
	Trademark	Bibliographic information with figures of published, public or applied trademarks in Japan	J	O	
	Published Patent English Abstracts Data	Bibliographic information with abstracts of published patents in Japan	E	M	
	Utility Model	Bibliographic information with some abstracts and drawings of published or public utility models in Japan	J	O	
The Japan Research Institute, Ltd.	JAPAN MARC	Catalog of books published in Japan	J	O	
	MONTHLY INDEX	Summaries of articles from business journals	J	O	
	NATIONAL REPORT	Policy information of Japanese Government	J	O	
	NHK News Text	Broadcasted news texts by NHK	J	O	
	NIKKEI FILE	Articles from newspapers including four Nikkei publications and several magazines	J	O	
	NIPPAN MARC	Catalog of books published in Japan	J	O	
	TSR-BIGS	Summarized data on Japanese companies	J	O	
	PRESIDENT-PROFIL	Profiles on CEO of Japanese companies	J	O	
Japan Weather Association (JWA)	Maritime Weather Reports	Weather reports on the North Pacific Region	O: Numeric	M	03-3238-0480
	Weather Satellite Data	Analyzed data from the NCAA and Himawari weather satellites	O: Numeric	M	
	Weather Satellite Imagery	Image data from the NCAA and Himawari weather satellite	O: Numeric	M	

Company Name	Database	Description of Database	Language	Format	TEL. No.
Jiji Press, Ltd.	JSD	Lists of prices for all issues on the TSE first section, Osaka first and second sections, and all issues on the NYSE and AMEX	E	O	03-3591-1111
	MAIN	Comprehensive securities and financial information	J	O	
JIMA Research Institute Inc. (JMAR)	Market Search	Reference to the reports of marketing research	J	O	03-3434-1721
KAJI PRESS, CO., LTD. (KP)	KEEP-SB	New shipbuilding information on 40 Japanese companies, 4 Korean and CSBC of Taiwan	E	O	03-3281-3014
Keizai Bunkaen Kenkyukai	JOINT (Journal of Industrial Titles)	A database of magazine articles on economics and industry	J	O	03-3279-1411 (Eet.) 353
KINOKUNIYA COMPANY Ltd.	BOOK	Information on the contents of books published in Japan	J	O/C	03-3439-0123
	MAGAZINE	Articles from 1,300 magazines published in Japan	J	O	
	MANAGEMENT	On-line version of the encyclopedia of management business "Gendai Business Taikei"	J	O	
	PRIZE	Information on prizes winners and prizes in Japan	J	O	
	WHO	Personal information on those extracted from newspaper, magazines, and books published in Japan	J	O	
KK Kyodo New Service (KK Kyodo)	JED	Flash report, cumulative	E	O	03-3584-4111
	JLS	Flash report database	J	O	
	KEES	Cumulative database	E	O	
KMS Inc.	KMS	Business information, e.g. marketing research on foreign countries, trends of consumers	J	M	0423-22-9921
LEGAL-ROM SO-HANBAI CENTER Co.	LEGAL-BASE (All judicial precedents in full text, civil and commercial laws)	Extraction of the area of the criminal laws from the above ROM	J	C	03-3987-4421
	LEGAL-BASE (All judicial precedents in full text ROM)	Addition of < reason > to the above ROM	J	C	
	LEGAL-BASE (All judicial precedents in summaries ROM)	Collection of summaries of all judicial precedents	J	C	
Mainichi Newspapers	"Economist" Database	Retrospective collection of articles from "Economist"	J	O	
	Economist News Flash	News-flash from "Economist" journal	J	O	
	Mainichi English Newsflash	Real-time news in English	E	O	
	Mainichi Shimbun Articles	Articles from Mainichi Shimbun	J	O	
	Mainichi Shimbun Leisure Information	Real-time leisure information from Mainichi Shimbun	J	O	

Company Name	Database	Description of Database	Language	Format	TEL. No.
Mainichi Newspapers	Mainichi Shimbun News Flash	Real-time news from Mainichi Shimbun	J	O	
	Mainichi Shimbun News Release	Real-time news release from Mainichi Shimbun	J	O	
	Mainichi Shimbun News Release Database	Retrospective collection of news releases	J	O	
	Mainichi Shimbun Regional news	Real-time regional news from Mainichi Shimbun	J	O	
Marketing & Research Corporation (M & RC)	DCF	Directory of Japanese medical doctors and facilities	J	M	03-3502-8521
MARUZEN CO., LTD.	J-BISC Others	CD-ROM version of "JAPAN/MARC", database of catalogs on books published in Japan	J	C	03-3271-6068
MRD Corporation	MRD ZENKOKU FUDOSAN JYOUHO CENTER	Sales and rental information of real estate	J	O	
National Diet Library (NDL)	JAPAN MARD (M)	Catalog of books published in Japan	J	M/C	03-3581-2331
	JAPAN MARC (S)	Catalog of serials published in Japan	J	M	
NIFTY Corporation	AERA Database	Collection of all articles from weekly magazine "AERA"	J	O	03-3221-6975
	ASAHI ONLINE DATABASE	English news from "Asahi Evening News" and others	E	O	
	Asahi Evening News	Articles from Asahi Evening News	E	O	
	Asahi News Service	English version of articles from Asahi Shimbun	E	O	
	Asahi Shimbun Database	Collection of almost all articles from Asahi Shimbun	J	O	
	Asahi Shimbun Newsflash	Newsflash from Asahi Shimbun	J	O	
	Asia Newsflash	Business information on NIES, ASEAN countries and China	J	O	
	Asian Business information	Micro-business Information of ASEAN and NIES Countries	J	O	
	BioWorld Online	Information on Biotechnology	J	O	
	Book/Monthly	Monthly revision of new information from "BOOK"	J	O	
	Book Street	Information on new books, best-sellers and lectures	J	O	
	Business Analysis	Articles on Japanese economy and industry	E	O	
	CD New Score information	Information on newly published and forthcoming CD	J	O	
	Current Index for Journals	Current articles of journals categorized into various fields	J	O	

Company Name	Database	Description of Database	Language	Format	TEL. No.
NIFTY Corporation	Economic Policy Information of Government	Information on reports from government agencies, Nihon Ginko, and others	J	O	03-3221-6975
	Educational News from Mainichi Shimbun	Articles on education, entrance examinations from Mainichi Shimbun	J	O	
	English News-Release	Collection of news-release in English	E	O	
	Event-Convention Information	Events, conventions and exhibitions in Japan	J	O	
	Financial and Economic News from Kyodo	Financial and economic news from Kyodo, AP, and Dow Jones	J	O	
	Finding Books	New book information	J	O	
	Fishing Information from Kansai	Fishing information of western Japan from weekly "Tsuri Sunday"	J	O	
	Flower Market Information	Price information of flowers at Tokyo Ohta Flower Market	J	O	
	Horse Race Tip	Numerical data of horse race forecasts	J	O	
	Hot 100 from Yomiuri Shimbun	Newsflash from Yomiuri Shimbun	J	O	
	I-N Industrial Statistics	Production, shipment/stock data and trade information for 39 industries	J	O	
	Industrial Monitor	News-monitoring service on Japanese industrial technological information	E	O	
	Industrial News	News-release from companies, governments and related organizations	J	O	
	JAPAN MARC	Catalog of books published in Japan	J	O	
	JETRO ACE	Collection of reports and other materials from 80 overseas points of JETRO	J	O	
	Kyodo Flash News Database	Online newsflash	J	O	
	Kyodo News Linkage Database	Collection of articles from Kyodo News linkage newspapers	J	O	
	Kyodo Newsflash	Newsflash from Kyodo News Service	J	O	
	Mainichi Daily News	English newsflash of Mainichi Shimbun	E	O	
	Mainichi Shimbun Company News Release	News release from Japanese companies and institutions	J	O	
	Mainichi Shimbun Database	Collection of major articles from the Mainichi Shimbun	J	O	
	Mainichi Shimbun Headline News	Summary of articles from Mainichi Shimbun	J	O	

Company Name	Database	Description of Database	Language	Format	TEL. No.
NIFTY Corporation	Mainichi Shimbun Lottery Information	Referral of winning number of lottery and others	J	O	03-3221-6975
	Mainichi Shimbun Newsflash	Newsflash from Mainichi Shimbun	J	O	
	Mainichi Shimbun Photographic Database	News photograph database	J	O	
	Mainichi Shimbun Regional News	Real-time regional news from Mainichi Shimbun	J	O	
	Music CD Catalog	Bibliographic and price information with critics for music CD	J	O	
	NHK News Texts	Broadcasted news texts by NHK	J	O	
	NICHIGAI ASSIST	WHO BOOK MAGAZINE Management	J	O	
	Nikkan Kogyo Shimbun Database	Collection of articles from Nikkan Kogyo Shimbun	J	O	
	NIPPAN MARC	Catalog of books published in Japan	J	O	
	Overseas Event Convention Information	Information on events, conventions and exhibitions overseas	J	O	
	Per-Golf information	Results of tournaments and new products on golf	E	O	
	PIA Coming Soon	Information on newly published CD	J	O	
	PIA Road Show Information	Updated road show guide	J	O	
	PIA Ticket Guide	Purchasing guide for tickets	J	O	
	Pro-baseball Night game News	Daily night game news of pro-baseball	J	O	
	Reference on Research Reports	Summary of research reports from public and private research institutions	J	O	
	Reports from Mitsubishi Research Institutes	Forecasts for 90's of various fields based on case studies	J	O	
	Sight-seeing information	Information on festivals, events, sight-seeing spots, and accommodations	J	O	
	Stock Price Newsflash	Stock price news from first and second section of TSE	J	O	
	The Teleputing Hotline	News related to telecommunication and information in English	E	O	
	TDN Horse Race Guide	Guiding information for horse races by JRA	J	O	

Company Name	Database	Description of Database	Language	Format	TEL. No.
NIFTY Corporation	This Week's Stocks to be Watched	Information on remarkable stocks selected by editors of investment magazines	J	O	03-3221-6975
	Title Search	Table of contents of industrial and technological magazines issued in Japan	J	O	
	Tokyo Financial Wire	Financial, economic, and company information of Japan	E	O	
	Tokyo Survival Guide	Guidance information on Tokyo in English	E	O	
	Top of Morning Newspapers	Newsflash of top articles form national newspapers	J	O	
	Toyo Keizai Company Information	Detailed information on Japanese listed companies and foreign owned companies	J	O	
	Travel and Taste	Profiles and special information on Hokuriku Region	J	O	
	TSR Company Information	Summarized data on 500,000 Japanese Companies	J	O	
	TV and Movie Daily Guide	Ratings of TV programs and movies	J	O	
	Updated Flashing Information	Information on techniques and points of fishing	J	O	
	USIA Wireless File	Reports from US government agencies	E	O	
	Yomiuri Shimbun Database	Collection of almost all articles from the Yomiuri Shimbun and the Yomiuri Katei Shimbun	J	O	
	Yomiuri Shimbun Newsflash	Newsflash from Yomiuri Shimbun	J	O	
	"Economist" Database	Retrospective collection of articles from "Economist"	J	O	
The New Materials Center, the Foundation of Osaka Science and Technology Center (NMC)	Metallic New Material Catalog Data System	3000 catalog data for metallic new materials, provided by 150 companies in Japan	J	C	06-443-5321
Nichigai Associated, Inc.	BOOK	Bibliographies and contents of books published in Japan	J	O/M/C	03-3768-5241
	MAGAZINE	Indexed articles from 1300 magazines published in Japan	J	O	
	WHO	Profiles of people extracted from newspapers, magazines, and books published in Japan. Bibliographic information is included	J	O	
Nihon Keizai Shimbun, Inc. (NIKKEI)	NEEDS				03-3270-0251
	Asian Corporate Profile	Description of Companies in Asia Including 12,000 Chinese manufacturers. 1,800 Korean listed companies and 600 listed companies of other countries	E	O/M	
	Bank Financial Data	Data on the annual settlements of banks	J/E	O/M	
	BLUE CHIP	Forecasts on business conditions and money-rate indicators by 50 U.S. forecasting firms	E	O/M	

Company Name	Database	Description of Database	Language	Format	TEL. No.
Nihon Keizai Shimbun, Inc. (NIKKEI)	Bond Futures Data	Bond futures data	J/E	O/M	03-3270-0251
	Capital Market Indicators	Data on capital market indicators	J/E	O/M	
	China Economic Databank	Major statistical data from China	J/E	O	
	CITIBASE	Major economic statistics and indices for United States	E	O	
	Commodity Data	Price data and demand/supply data of major commodity market conditions	J/E	O	
	Commodity Databank (NEEDS-COMMODITY)	Commodity databank	J/E	O/M	
	Comprehensive Economic Data by Size	Comprehensive economic data by scale	J/E	O/M	
	Consumer Rader	Originally obtained data on attitudes and reality of consumer behaviour toward financial issue	J	O	
	Consumer Statistics Data	Consumer price data from GAA	J/E	O	
	Corporate Action	Data on company finances	J/E	O/M	
	Corporate Action Related Data	Data on pattern of fund raising, increase and decrease of capital, and other bond issuing by listed companies	J/E	O/M	
	Corporate Earning Estimates for Listed companies	Flash report data on corporate earnings estimates for listed companies	J/E	O/M	
	Corporate Profile	Outline of major companies	J/E	O/M/C	
	Daily Exchange Rate & Interest Rate Data	Daily data of foreign and domestic exchanges	J/E	O	
	Data on borrowing by Financial Institutions	Data on borrowing by provided by Industrial Bank of Japan	J/E	O/M	
	Earning Estimate for Listed Companies	Estimated and actual data of balance of settlements of accounts for listed companies	J/E	O/M	
	Economic Data by Size	Economic statistical data of small-to-medium-sized companies	J/E	O	
	Energy Data	Demands/supply data and cost data on petroleum, coal, electric, gas, and nuclear power	J/E	O/M	
	Energy Databank (NEEDS-ENERGY)	Energy databank	J/E	O	
	Financial Databank (NEEDS-MONEY)	Financial databank	J/E	O/M	

Company Name	Database	Description of Database	Language	Format	TEL. No.
Nihon Keizai Shimbun, Inc. (NIKKEI)	Financial Statement for Listed Companies	Balance of settlements of accounts for listed companies	J/E	O/M	03-3270-0251
	Financial Statement for Banks	Balance of settlements of accounts for banks	J/E	O/M	
	Financial Statement for Security Houses	Balance of settlements of accounts for security houses submitted to MOF	J/E	O/M	
	Financial Statement for Insurance Companies	Balance of settlements of accounts for non-life insurance companies submitted to MOF	J/E	O/M	
	Flash Report for Listed Companies	Balance of settlements of accounts for listed companies as disclosed	J/E	O/M	
	Flash Reports on financial Data for Listed Companies	Flash report data on the financial affairs of listed companies	J/E	O/M	
	Futures Data	Trading and price data of forward buying stock and bond	J/E	O/M	
	IFS	IFS databank	E	O/M	
	IMF Multilateral Trade Data	Trade data of about 160 countries in the world	E	O/M	
	IMS Data	Financial statistics and price Indices with GNP for IMF member countries	E	O	
	Industrial Data	Statistical data on various industries obtained from MITI and industrial associations	J/E	O	
	Input-Output analysis Databank (NEEDS-10)	Input-output databank	E	O/M	
	Input Output Table	Input-output tables originally developed by Nikkei based on public statistics	J/E	O	
	Insurance Financial Data	Data on the annual settlements of insurance	J/E	O/M	
	International Trade Statistics	International trade statistics by country from MOF	J/E	O	
	Listing Annual Accounting Settlement Data	Data on the annual and interim settlements of listed companies and consolidated settlements	J/E	O/M	
	Macro Economic Databank (NEEDS-ECONOMY)	Macro economic databank	J/E	O/M	
	Major Market Indices Data	Stock price average data by Nikkei and of 500 major stocks	J/E	O	
	Marketing Databank (NEEDS-MDB)	Marketing databank	J/E	O/M	

Company Name	Database	Description of Database	Language	Format	TEL. No.
Nihon Keizai Shimbun, Inc. (NIKKEI)	NEEDS-CHINA	A databank system on the Chinese economy	E	O/M	03-3270-0251
	NEEDS-PORT FOLIO	Portfolio analysis	J/E	O	
	News Flash	Real-time news from all over the world categorized by subjects	J/E	O	
	Newspapers, Newsletters, and Magazines for Text Search	Articles from newspapers including four Nikkei publications and several magazines	J/E	O	
	Nikkei Asian Corporate Profile	Basic nikkei database on Asian companies	E	O/M	
	Nikkei Basic Corporate file	Company outlines	J/E	O/M	
	Nikkei Energy model	Quarterly metrical model for evaluation and forecast for demand/supply of energy sources	J/E	O	
	Nikkei Macro Economics Statistics	Major national statistics of Japanese economy including statistics of earnings, life, business, and finance	J/E	O/M	
	Nikkei Macro Model	Metrical model for quarter analysis intended to provide short-term forecast and structural analysis	J/E	O	
	Nikkei Monetary Databank	Major financial data including money supply, interest rates and capital circulations	J/E	O/M	
	Nikkei Monetary Model	Short-term metrical model for market interest rates and public bonds	J/E	O	
	OECD Economic File	Major economic indices including GNP, production, employment, consumer price and international exchange for 25 major nations	E	O	
	OECD National Income Statistics File	National expenditure and its itemized break-down for 13 industrial nations	E	O	
	Options Data	Trading and price data of options	J/E	O/M	
	Personnel Data Bank	Personnel data of executives of major companies and managing staff of government employees	J	O/M	
	Portfolio Related Data Service	Various indices on risks and returns in Japanese and US stock market investment with portfolio evaluation system	J/E	O	
	POS Data	POS data on daily goods including food and household commodities collected from 150 stores	J	O	
	Regional Databank	Regional data on area, population, land price, and establishments	J/E	O	
	Regional Economic and Financial file	Regional industrial, financial, consumer price, labor force, and commerce data	J/E	O	
	Regional Input Output Table	Input output tables within and between regions by MITI	J/E	O	
	Reports to Shareholders on Major Non-Listed Companies	Business data on major non-listed companies	J/E	O/M	
	Securities Financial Data	Data on the annual settlements of securities	J/E	O/M	

Company Name	Database	Description of Database	Language	Format	TEL. No.
Nihon Keizai Shimbun, Inc. (NIKKEI)	Securities Market Indicators	Daily data on securities market indicators	J/E	O/M	03-3270-0251
	Securities Reports on Non-Listed companies	Data on major non-listed companies which issue securities	J/E	O/M	
	Short-term Model for Seven Advanced Nations	Quarterly metrical model for Japan, US, UK. France, Germany, Italy and Canada intended to provide short-term forecasts	J/E	O	
	Statistical Data on Consumption	Statistical data on consumption	J/E	O/M	
	Statistical Data on Wholesale/ Export-import Prices	Statistical data on wholesale and import/export prices of goods	J/E	O/M	
	Statistical Data Wholesale Consumer Price	Wholesale price indices, import price indices and input-output price indices by industry	J/E	O	
	Statistical Survey of Incorporated Enterprise	Statistical data on incorporated enterprise	J/E	O	
	Statistics of Incorporated Enterprises	Statistics of incorporated enterprises from MOF	J/E	O/M	
	Statistics on Construction	Statistics on orders received, starting works, and other construction related activities	J/E	O	
	Statistics on Products, Shipments, and Inventory	Statistics on products, shipments, and inventory from MITI	J/E	O	
	Stock and Bond Data	Stock data of listed companies and over-the-counter trading in national stock market and bond data for Tokyo and Osaka Exchanges	J/E	O/M	
	Stock Index Futures	Stock index futures	J/E	O/M	
	Technical Indices for Industries and Each issue	Basic indices and indices by industry on Tokyo and Osaka Exchanges	J/E	O	
	Unlisted Companies Submitted their Securities Reports to MOF	Securities report information submitted to MOF by unlisted companies	J/E	O/M	
	Unlisted Companies Submitted their Marketing Report to MOF	Marketing report information submitted to MOF by unlisted companies	J/E	O/M	
	World Bank External Debt Statistics File	Balance of debts and other economic indices of 105 developing countries	E	O	
	World Economic Forecast Databank	Databank of international economic forecasts	J/E	O/M	

Company Name	Database	Description of Database	Language	Format	TEL. No.
Nihon Keizai Shimbun, Inc. (NIKKEI)	World Economic Long-term Model	Annual metrical model for long-term forecasts of the world except communists' countries in which original simulation is available	J/E	O	03-3270-0251
	Nikkei Telecom (online database service available via personal computer) < Japanese Version >				
	Nikkei Telecom Japan Financial News & Data (Japanese Version)	Worldwide news and newsboard of financial and market data	J	O	
	Nikkei News Telecom	News, newsletters, searches of articles, encyclopedias, biographical registers and so forth	J	O	
	Nikkei Telecom Management Information	News and management information	J	J	
	Nikkei Telecom Industry & Technology	Trends in semiconductor and IC Industries, analytical data divided by industry	O	O	
	< English Version >				
	Nikkei Telecom Japan News & Retrieval	A comprehensive English language online service providing information on the Japanese economy, industry, market conditions, and companies	E	O	
	Nikkei telecom II Japan Financial News & Data	The same as the previous entry, but a new colour graphics capability has been added, and the news and market information has been expanded	E	O	
NIPPON SHUPPAN HAMBAI INC. (NIPPAN)	NIPS	Bibliographic information of Japanese books published by major publishers	J	O/M/C	03-3847-1701
Nippon Statistics Center Ltd. (NSC)	Metropolis Sphere Micro Database	Social indicators to observe major metropolitan area	J	M	
	Nationwide Cities, Towns, and Villages Database	Social indicators to observe regional markets and their vitality	J	M	
NISSHO ELECTRONICS CORPORATION (NELCO)	Dentists' File	Personal information on dentists in Japan	J	M	03-3544-8351
	Diamond Companies' Staff List File	Personal information on directors and executives in listed or popular companies	J	M	
	National Large-Taxpayers File	Large-taxpayers who payed more than ¥10,000,000 annually	J	M	
	Physicians and Medical Facilities File	Personal information on physicians and information on medical facilities in Japan	J	M	
Nomura Research Institute	NRI/E	Macro economics in Japan	E	O/ (M)	03-3297-8160
Okinawa Information Communications Corporation	KENSETSU INFORMATION SERVICE	Bidding and confirmation information of public buildings	J		
Personal Business Assist Inc. (P. B. A.)	PCOM-HOST	Information file on communication software "PCOM" series	J	O	

Company Name	Database	Description of Database	Language	Format	TEL. No.
QUICK Corp.	QUICK-10	Comprehensive economic information and news, focused on securities, finance, and exchanges	J/E/O: Numeric		03-3201-5941
	QUICK-10E	European version of QUICK-10, Presented by QUICK EUROPE LIMITED.	J/E/O: Numeric	O	
	QUICK indicator board	Various economic indicators	O: Numeric	O	
	QUICK Video-1	Economic information and new, focused on securities	J/E/O: Numeric	O	
Technomic Information Service Inc.	PHARMCAST	Information about R&D for medical supplies in the world	E	O	
TEIKOKU DATABANK, LTD. (TDB)	COSMOS 2	Summarized data on 900,000 firms in Japan	J	O	03-3404-4311
	Nikkei Telecom	Summarized data on 900,000 firms in Japan	J	O	
	TEIKOKU DATABANK: JAPANESE COMPANIES	Business information of 500,000 Japanese companies with English trade name	E	O	
TOKYO SHOKO RESEARCH, LTD.	Nikkei Telecom	Information on Industries and firms	J	O	03-3574-2274
TOYO KEIZAI INC.	Bloomberg	Provision of company and financial information for Bloomberg	E	O	
	Japan Company PROFILE	Company information with financial and achievement forecast based on corporation with Reuter Ltd.	E	O	
	MINITEL	Provision of data from "Japan Company Handbook" to MINITEL	E	O	
USACO Corporation (USACO)	Actinomycetes Antibiotics Database plus 1	Data on actinomycetes and other antibiotics	E	M	
THE YOMIURI SHIMBUN (YOMIURI)	The Yomiuri Shimbun Article Database	Collection of articles from Yomiuri Shimbun including regional pages	J	O	03-3242-1111

Appendix-2 Japanese Databases Planned for Overseas Expansion

Subject: ① Science and Technology ② Economics, Business and Finance ③ General or Others

Language: J: Japanese E: English O: Others

Vendor Status: P: Producer D: Distributor A: Agent T: Telecommunication

Format: O: OnLine M: MT, FD

Database Name	Description of Database	Subject	Language	Vendor Status
ABC DATA ONLINE SERVICE	Data on number of copies published for newspapers and journals	②	E	M
Article Database	Collection of articles from Chugoku Shimbun	③	J	O
Atomic Bomb Article Database	Collection of articles rolated to Atomic Bomb	③	J	O
C & C-VAN Database Service	Online database of business information including Teikoku Databank company information and Asahi Shimbun articles	②/③		O
CD-NET (in English)	Integrated database of chemical industry	①/②/③	E	O/M
COMLINE Corporate Directory	Descriptive information of 30,000 Japanese companies (starting from September, 1991)	②	E	O/M/C
COMLINE Fundamental Data	English and Japanese text of "Securities Reports" published by MOF	②	J/E	O/M/C
Company Database	Information on companies	③	J	O
THE DAILY YOMIURI News Article Database	Major articles including editorials and colums from "The Daily Yomiuri"	③	E	O
DIALINE	18 Database files on JAPAN/MARC, NIPPAN/MARC, NATIONAL-REPORTS, and others	②/③	J	O
EDMC ENERGY DATABANK	Data on demand/supply of energy by source, cost of energy production by source and other energy related topice	③	J/E	O
English Abstracts of Published Patent	English abstracts of published patents since October, 1976	①	E	M
FISHERY INDEX	Bibliographic information on marine products and ocianic environment	①/③		O
JETRO/KASHIN	List of existing chemicals of "Chemical Substances Control Law" in Japan	③	E	O
JETRO WINDS	Information collected by JETRO in promotion of Japan import	③	J	O
KINODIAL (F-BOOK)	Publishing information of 500,000 books from western countries	①/②	E	O
KWS	Cumulative	③	E	O
MIC-POS	POS data	②	E	O/M
New Medicine	Information on test medicine under development	①	J	O
NHK Broadcasting Database	Database of information and documents collected, edited and preserved for broadcast	③	J	O/M/C
Nikkan Sports News	Collection of articles from "Nikkan Sports Shimbun"	③	J	O
Personal Database	Information on persons	③	J	O

Database Name	Description of Database	Subject	Language	Vendor Status
PHARMCAST	Profiles of world test medicine and new medicine	①	E	O/M
Polymer 8 Analytical Chemistry	Handbook of analytical data in the field of high molecuiar molecular chemistry	①	J/E	M/C
Safety Science	Science of safety	①	J/E	O/M
SCI-SS	Perchase information of consumers	②	E	O/M
TDB Company Information	Company information	②	J	O
TKC Legal information database	Full text of case laws on civil affairs and administrative laws	③	J	O

Appendix-3 Database Construction and Technical Development Promotion Project

DPC financially supports some private companies and industrial organizations for the production of database and technical development.

DPC has provided this aid for two main purposes since 1984. The one is to promote the production of databases which is socially, economically and internationally, important or essential for the promotion of regional development and local industries. The other is to activate research and development of the database related technologies, which aims at increase of the efficiency of production, distribution and utilization for databases.

Consigned project has been performed for 5 subjects in 1984, 18 subjects in 1985, 24 subjects in 1986, 29 subjecvts in 1987, 24 subjects in 1988, 20 subjects in 1989, and 23 subjects in 1990. The number of subjects covering various fields from 1984 to 1990 has reached 143. Subjects produced for 1990 are summarized as follows:

Subjects Contracted for Database Production and Technical Development for 1990

FIELD: Society

TITLE	Research on the feasibility of pathological database including morphological comments
CONSIGNED COMPANY	SPO Co., Ltd.
CONTENTS	The various data which have accumulated in the process of medical work should not only be limited to the individual medical records of past cases. These data should be widely and effectively utilized as the fundamental and active materials for even better medical care and for prophylactic purpose. The pathological data is largely made up of language information which describes morphological features of tisse. To process this data, the coded systems which are based on the Free Text method or SNOP (Systematized Nomenclature of Pathology) or SNOMED (Systematized Nomenclature of Medicine) are advocated. However, in actuality, it is confusing how to deal with the pathological data. The cause of this confusion comes from the fact that the pathological terms are not accurately standarized and these equivocal terms are used in routine work.

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CONTENTS	This research undertakes to accumulate the highly complex informations of the pathological diagnosis and the crude date of pathological morphology. It also conducts a fundamental study and a conception design aimed at constructing the database system, which includes information of periodical treatments given to the patient and their outcomes. Having constructed this database, it becomes possible to check each conception of the pathological terms used by the individual pathologist. Therefore, this database can be used as the fundamental material to give even better medical treatment and to do prophylactical work.

TITLE	Constructing support environments for accident and disaster
CONSIGNED COMPANY	Laboratory of Urban Safety Planning
CONTENTS	Accident and disaster information database has started experimentally its online service this year (1990). This database needs to be more usable, and should have more valuable use in the future. To do so, we have decided this year to grade up the dictionary ability mounted in the system which is used for automatic extraction of keywords. These keywords are considered as important words upon retrieval of data. Especially, we have tried to set up on automatic extraction of keywords in a bibliographic field which includes valuable information about details of accidents and disasters. Also, about their progress, results and effects. This bibliographic field has been improved to be able to retrieve data by using this information (this bibliographic field has had bibliographic names on inputted items). Furthermore, as the materials for prevention of accidents or safety measures, visual information such as TV news is important. Until now, we have not dealt with the visual information in this database. However, to completely integrate this database, we should study the methods of its utilization. Therefore, at first, we carried out research needs for the visual information, its location and the possibility of its utilization.

TITLE	Constructing classification index database for AV/MARC
CONSIGNED COMPANY	Daiso Media Service
CONTENTS	In Japan, we have difficulties finding books or materials in libraries by their content. When doing so, we check out books or materials by their subject or classification, but there are few libraries which have a complete index system to find books or materials by their subjects. On the other hand, libraries in the United States have maintained and developed their subject index system over a century. However, some people have pointed out that this subject index system is not as easy to use compared with the key word system using an online database service which has recently been developed. This database aims to add key words and detailed classification numbers to bibliographic data for AV materials, and to provide a thesaurus for the AV material retrieval systems in the future. The AV/MARC music classification (AVMC), the core of this database, is based on the "music" section of the DDC 20 version, which introduces facet classification method, and has been further developed in consideration for use in Japan.

TITLE	Construction of climate information database
CONSIGNED COMPANY	MTS Institute Inc.
CONTENTS	Recently, the concerns about natural enviroments of the earth have increased, and many institutions in the business world and the government have started thier studies to respond to those concerns. A wide range of weather data and statistical processing ability are needed for those studies. To respond to the needs, weather information as the basis of this study was gathered. As the first step, the weather data in Japan were collected and put into a database last year, 1989. For the second step, this year (1990), the extraction and data processing such as return period of the meteorological avalanches, snowstorms, heavy snow fall, fog, acid rain, salt damage, high waves, typhoons, flood, drought were made in the use of the first stage database, and were added to the database. At the same time, the user interface has been improved to facilitate the user. The future plans will be that the further improvement of this user interface is carried out, and systems such as online access are gradually stepped up.

TITLE	Constructing database for self-control of health and disease prevention
CONSIGNED COMPANY	Computer Convenience Inc.
CONTENTS	When looking at a mirror every morning, we instinctively judge our health, mental and physical conditions. In many cases, our judgment is generally correct. This is because we can read some "signals" emerging in the continuity of daily life, based on the individual sence for health, the health history and the type of life style. We have succeeded in developing a method, which extracts the "chaotic attractor" from the pulse wave data of finger tips, and expresses visually mental and physical conditions. We have collected data for healthy adults who are in various mental and physical conditions, pregnant women and infant in the process of thier development, and those who are mentally or physically ill. We have analyzed the relationship between the "chaotic attractor" taken from the pulse wave of those people and the mental and physical conditions. Based on this analysis, by continual observation of mental and physical conditions, we constructed the database so people can do self-checking of health and prevention of diseases, shifting from the dependence on the standardized medical treatments.

TITLE	Research and study for constructing database about the information on the life and the actual conditions of aged persons
CONSIGNED COMPANY	Misaki Settlement for Aged Persons
CONTENTS	Based on the data about the life of aged persons which have accumulated through practical health and welfare activities over the years, we tried to construct a database. At the same time, based on this data, we researched what was necessary information for the life of aged persons. Then we aimed at creating a database which was able to accumulate the information for the future. In the first stage, we put the record of life and various check lists of the aged persons in Misaki District, Moriyama-city, Shiga Prefecture into a database through the activities of Misaki Life House. By doing so, we planned to research the possibility that this database could take quick countermeasures against sickness and diseases particular for the aged persons. Moreover, we used this research for preventive measures against these sickness and diseases.

TITLE	Investigative research on the traffic accident investigations database
CONSIGNED COMPANY	Japan Automobile Research Institute Inc.
CONTENTS	It is necessary to clarify the causes of traffic accidents and injuries in carrying out traffic accident investigations as the first step in reducing traffic accidents and reducing the number of injuries to passengers at the event of the accident. Even in Japan, informations related to traffic accident investigations are kept by several agencies and traffic accident investigation information, enforced over the past 17 years is kept by this research institute as well. However, the information that is kept by this research institute has many problem points in which it could be said that the accumulated structure of the data doesn't necessarily form a generally easy to use database. The problems are; the links to the statistics analysis, the links with the basic data for such things as the specification of the vehicles and the methods for the accumulation and usage of pictorial information related to the traffic accidents. From this sort of background, the trend investigation was conducted concerned with various techniques, beginning investigations related to internal and external accident investigations and those databases involved.

FIELD: Regional activation/promotion of small and medium companies

TITLE	Research into the subject nature of the Asian Pacific Ocean exchange database
CONSIGNED COMPANY	The Nishi Nippon Shimbun
CONTENTS	On welcoming the era of internationalization, the influx of foreign people and the advances of foreign companies are increasing rapidly in Kyushu and Fukuoka, as the entrances to the Asian Pacific Ocean. Amongst the foreigners trying to experience life in Japan, foreign travellers or foreign workers, the legal procedures and the way to access basic information on living in Japan, is scattered in different administrative agencies. Also, there is insufficient information and there are many who feel things are inconvenient. Accordingly, this project was busy with research into the subject matter of "The Asian Pacific Ocean exchange database". The subjects of concern were foreigners who make short stays of less than two or three years and foreign travellers.

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CONTENTS	The first steps conducted for the following research procedures: (1) What kind of information is necessary for the short stay foreigners? (2) What is the best way to collect and maintain this information? (3) Examination of an efficient hardware and software for the Asian Pacific Ocean exchange database information system. Concerning the problem points of the above mentioned systems operations, we members of the Nishi Nippon Shimbun want to find a solution to it while adding detailed research from the various administrative agencies which have international relations and foreign related institutions (such as consulates). Also, we are considering Japanese and English original system, but we must keep a sharp look out for the progress of those automatic translations, the retrieval techniques as well as to the cost performance for the prospect of wishing to expand it to other languages such as Chinese and Korean.

TITLE	Constructing the planning support system database which integrates analysis and proposal methods and the regional data subdivided into commercial strategic zone level
CONSIGNED COMPANY	Sapporo Toppan Printing Co., Ltd.
CONTENTS	While society as a whole is depending on more information and becoming more systematized, the importance of planning and proposals in companies is increasing. Society is now called a "planning society". However, many companies have difficulties to grasp the consumers' trend and to plan sales strategies because each consumer becomes more individualized and the consumer structures become more complicated and diversified. In particular, among small and medium companies which are operated locally, some companies do not have the know-how and enough man power within their companies to do the planning or the proposals. Therefore, by themselves they can not plan or propose for their clients, which are mainly composed of regular companies, by themselves.

CONTENTS	This project, as a planning support system which is supposed to easily allow creation of plans and proposals, constructed the integrated database including regional statistic data, marketing methods such as establishment of commercial strategic zone, the analysis methods by mapping data. Also the end users' customer information, the examples of the plans, and the plan format including pictures and images are included. Furthermore, using DPT (Desk Top Publishing) technology, high output becomes possible. This project also prepares educational instruction curriculum, such as the operation of the system and the know-how for the plans and proposals.

TITLE	Research and study on the effective management for regional information network service
CONSIGNED COMPANY	Central Development Co., Ltd. Ruko Intelligent Terminal
CONTENTS	The numbers of "online databases for commercial use" have increased year after year. All sorts of information are available, and the quality and the quantity of information are being enhanced. Moreover, the technology regarding the computer network has been developed to the level that there are no area differentials. On the other hand, in many cases, the numbers of database and personal computer communications which are only developed in local areas have increased, but the utilization have been limited. Therefore, to grasp the actual situation of regional information databases, it is important for the popularization and the education of databases. Also, some areas have high needs to use the valuable information on database used by other areas. However, at present, it is hard to say that these needs are satisfied. To promote smooth availability in distant areas, the cause of the impediment to present the information to other areas should be researched and analyzed. This project grasped the actual situations of regional information databases, and took up the problems for the mutual connection while targetting to create the model plan which would connect each database in the different areas by available nationwide VAN or server for future use.

TITLE	Constructing human resource database in Kyushu
CONSIGNED COMPANY	Kyushu Industrial Technology Center
CONTENTS	All Prefectures in Kyushu have been designated as 'technopolis'. While playing an important role as the center place to develop leading technology, each "technopolis" has proceeded to upgrade the high-technology industry. To further activate the industries in the whole of Kyushu, information about the human resource of researchers and technologists should be put into database, be utilized effectively, and be available for wide use. The opinion polls on "research and study regarding the human resource information database in Kyushu" has conducted in 1989. As a result, the following points had become clear : (1) the requests and expectations of a complete database regarding the researchers and the technologists, especially the college researchers are very high, (2) there is no database for the human resource information covering the whole of Kyushu, and (3) the access to the human resource information is very difficult. Therefore, the need to construct a human resource database had become urgent. Based on the result of the polls, the database of the college researchers was set up this year (1990).

FIELD: Sales/service

TITLE	Constructing business promotion database for small and medium companies in Tokushima City*Regional activation/promotion of small and medium companies
CONSIGNED COMPANY	New Media Tokushima Co., Ltd.
CONTENTS	Recently, the circumstances surrounding the small- and medium-sized businesses and service businesses have been extremely severe. Especially, the sales in specialized shops and the small retail shops in arcades, have been low because of the advancement of large supermarkets and department stores, and the diversification of consumers' needs . To take countermeasures, in many places, big projects such as redevelopment of commercial areas have been planned, and have gained attention. More importantly, the specialized shops and the retail shops should install the enhancement of the customer service into their business principles, grasp properly the customers' needs, and keep the customers with them.

CONTENTS	With understanding these necessities, New Media Tokushima Co., Ltd. embarks on constructing the customer information database, conduct information service, which is locally oriented, and try to increase the numbers of customers. At the same time, by using this database, the customers' needs will be looked up in advance, and the sales in these shops will increase. The database constructed in this system is composed of the customers' information (their address, name, sex, date of birth and telephone number) who come to the center commercial zone in Tokushima City, and of the purchase information (date, shop and amounts of purchase) through bank POS used by the customers in this area. In addition, the database has the information about participating shops such as shop name, address, name of representative and telephone number. These information are stored and managed unitarily.

FIELD: Overseas

TITLE	Constructing an English-Language Database of Small/Medium-Sized
CONSIGNED COMPANY	Comline International Co., Ltd.
CONTENTS	With the recent rapid advance of Japanese industry worldwide, the demand for information on Japanese companies has incresed. However, there is only a limited amount of information of this type avallable in English. Furthermore, among the existing information sources, the vast majority deals with the major companies (i.e., companies listed on the Tokyo Stock exchange), and information about small- and medium-sized compcnies is a11 but non-existent . This is one cause of the 'information friction' which has become a problem between Japan and the U. S . The current database contains information on some 3,000 small- and medium-sized Japanes companies in the fields of Blotechnology, Medicine, and Chemicats & New Materials. The database Includes not only corporate information on these companies, but also new information on the companies extracted from COMLINE International Corp.'s daily high-technology news service. The database is therefore aimed at providing not only 'static information such as company profile (e.g., date of establishment, cnpitalization amount)', but also "dynamic," continuously updated information that reflects the coverage of these companies in the new media. Current plans call for compilation of information on 3,000 companies during the first year, but a total of some 30,000 companies targeted for the end of the third year.

TITLE	Arrangement of overseas standards (Soviet Union National Standards) database
CONSIGNED COMPANY	Japan Electronic Calculation Co., Ltd.
CONTENTS	The standards information is about the standard and the criterion to improve products, and reduce the cost while securing the safety, the compatibility and the performance of the products. Having increased the demands for the standard information database because of outstanding progress of the computers, the distribution of the standard information in each country has become important in terms of the development of international trade and the progress of technological innovation. Under these circumstances, the standards information corresponding to vigorous economic activities in the Soviet Union and East European countries has become urgent. Among the overseas standards information of the Soviet Union and East European countries, GOST database, which is for the national standards of the Soviet Union, was constructed and arranged this year (1990). The acquirement of GOST was carried out in cooperation with Japan Standards Association. Also, the GOST database collected about 25,000 standards, and was made available by online retrieval. Constructing this database should contribute to the development of industrial and social activities, and should be considered internationally important.

TITLE	Research of database construction on official developing aids (ODA)
CONSIGNED COMPANY	Japan International Cooperation Systems
CONTENTS	In recent years, the amount of ODA from Japan has spread rapidly, and has achieved the No.1 in the world, while the demands from developing countries are diversified and sophisticated. A number of administrative agencies and various groups have participated in the operation of ODA, and/or their aid operation data and various basic information about developing countries, which belong to each agency, have not been used sufficiently. Consequently for this database construction research, we have done a survey on the actual condition of the related information from government and non-government agencies, concerned with ODA in Japan, and have grasped how to use the information.

CONTENTS	This year, 1990, however, in dealing with the present operative management, we have formulated a basic plan to gradually prepare the data concerned with part of the bilateral donation (equipment and materials by grant aid and technical cooperation program), which are the most important and also have a considerable effectiveness to construct the information management system. Subsequently, we have made up a basic concept to construct an operative information database required to promote the efficient practice of ODA.

TITLE	Research and study on the functions of terminology database systems
CONSIGNED COMPANY	INS Co., Ltd.
CONTENTS	Having conducted research and study of the terminology for constructing a database as the consigned project in 1989, the present situation of terminology in this country has been studied. As a result, we have found that many specialized words have been collected, and the numbers of these words are not less than these of the European countries where the activities to collect the specialized vocabularies have been active. For instance, over 300 dictionaries and the glossary of term have been published, and over 1 million specialized terms have been standardized. However, the study also pointed out that this information is only available in the form of books, and they are not available in the form of a database. According to the questionary, the reason why the database of the specialized terms has not progressed is not to mention the lack of money, the lack of the information about the structure and the function of the database. In other words, these are not clear; what kind of database should be developed and how the specification of the database should be. Therefore, we hesitate to activate this database. This research and study had examined the demands for the terminology database, putting the terminology information into database, carrying out the research on how to use the information which was not realized in the form of the books, and completing the information to promote the constructing of the database.

TITLE	Project on constructing the experts database
CONSIGNED COMPANY	Japan Overseas Development Corporation
CONTENTS	The requests for the dispatch of Japanese nongovernmental experts from companies in the developing countries have increased year after year. Also, because the content of the requests cover a wide range of technology fields, and management fields, the selection and the dispatch has been difficult. Therefore, to solve these problems, a wide range of experts should be stored, selected immediately upon the requests, and a system should be established to dispatch the suitable experts. This project aimed to create a database for detailed information about the experts who are available for dispatch and to build the information network which is available for the related organizations in Japan, corresponding to a variety of requests from the companies in the developing countries. Registration numbers of the expersts numbered about 1,000 in consideration of the balance of each speciality. The individual information data on these experts was inputted as much as possible, and this data was made to give easy output. However, taking consideration of the privacy of these experts, the extent of the availability of the data was established by each user. For access to the data, there were two ways : an online system which used telephone lines, and the supply of printed matters. As for the online system, the access to each item by the keyword, the code and the number was adopted.

FIELD: Technology

TITLE	Development of the database management system for VAN
CONSIGNED COMPANY	Sharp Corporation
CONTENTS	The high level of research on the user model and the conceptual model is needed for study to present proper information taken from the large volume of information stored in database. This R&D has the feature of utilizing value added information to actualize both models. The following functions were developed to define the relationship between the valued information of each individual (user view) of the information taker and the valued information of each document (document information view) of the information supplier (database).

CONTENTS	(1) The function to define the user view (the individual information of the users such as job description, age, etc.) (2) The function to define the document information view (the examples of good documents in the related field and, management information). (3) The function to define the relationship between the user view and the document information view by the fuzzy logic. (4) To actualize the best man-machine interface to utilize the above-mentioned functions. These developed systems have important functions which should be the foundation of group ware, and can be applied to VAN used within a company.

TITLE	Research and study of the dictionary management system for records management Technology
CONSIGNED COMPANY	Office Research Institute
CONTENTS	With the advancement of office automation, the importance of records management is moving from a paper filing system to an electronic filing system using machine-readable media (word processor, optical disc). The needs for the retrieval system of the document information database by natural language are very high, and a thesaurus dictionary to match the words is imperative. However, it needs a lot of human power to create and update the dictionary. Therefore, many companies give up the operation of this system. This research aimed to create a realistic management system to easily update the dictionary which was targetted for a natural language retrieval system used for document database within a company in general offices for example of a dictionary for records management (RM dictionary). This management system was to check the words which were cut by the word cutting system with RM dictionary when the document information were newly registered , and to update the dictionary based on these unmatched words. Therefore, the users could upgrade the dictionary while utilizing the database system.

TITLE	Constructing a prototype of an extensible database for the architectural CAD
CONSIGNED COMPANY	Mitsubishi Electric Co., Ltd.
CONTENTS	The design, manufacturing and office environments are changing greatly due to the development of computer technology. Best of all, design work has been improved remarkably in aspects of its design quality and productivity as CAD has spread. One of the improvements in the architectural design enabled by the use of CAD is the added precision and efficiency in checking the effect derived from the architectural and legal regulations which affect the designing architecture, and simulating the structural strength. The advanced CAD has allowed CAD data to be shared by many application programs, resulting in the increased needs of the CAD database. Purpose of this subject is to establish a prototype of a Database Management System (DBMS) to meet the needs of the CAD database. The architectural layout diagrams are to be stored as data. Features of the DBMS: (1) Integrated management facilities of the geometric data and an attribute data. (2) Hierarchy data structure expansion facilities. This DBMS is planned to be improved to provide general purpose facilities, large capacity and high speed.

TITLE	Constructing a proto type database of advanced composite materials
CONSIGNED COMPANY	R&D Institute of Metals and Composites for Future Industries
CONTENTS	The advanced composite materials (hereafter referred to as ACM) are expected to apply to the frontier industries including aircraft, aerospace, and energy, as well as medical and leisure in the 21st century. From the background of this age, it is becoming necessary in industries to gather the fact data of ACM and construct the database, and to furnish processing information. Also, the demands of carrying out plans in designing the ACM used products and parts, and in developing the related materials have been increasing. In this ACM database proto type, the system was framed to file the fact-data about ACM, including organic, metals, and ceramics on the personal computer. This verifies that the selection of the materials and the combination of materials which meet the required purpose and design requirements are possible.

CONTENTS	In future, in developing the proto type, it will be possible to gain an online access to the database by the work stations, with the intention of spreading the ACM database to the industries.

TITLE	Constructing the databases of programmable peripheral devices for microcomputers
CONSIGNED COMPANY	Japan System House Association
CONTENTS	The range of microcomputer applications has been extended so remarkably in recent years that they have had a great impact on ordinary life as well as the vitalization of industry, having formed an important technical area as a nucleus of the economic society in our country. On the contrary, the shortage of engineers in the development companies of equipment and systems has become more and more intensified. To resolve this problem, it is indispensable to bring up engineers and create efficient development environments. This database features an expert system which supports the application of programmable peripheral devices and easily enables the device incorporation into the system, even those unfamiliar with microcomputer application development engineers. Therefore, the contents of manuals of the devices and the technical knowledge about the application fields are stored in the database. The types of devices included are: CPU function support LSI, interface LSI, peripheral controller LSI, and other peripheral LSIs for microcomputers. This database is to be used by the microcomputer application development engineers in the system design.

TITLE	Research and experiment on the possibility of a dynamic thesaurus for a bibliography databas
CONSIGNED COMPANY	Kinokuniya Company Ltd.
CONTENTS	The ideal retrieval functions for bibliograhic databases are automatic analysis of questions and texts for data retrieval. We have positioned this system function as dynamic thesaurus and carried out study on this theme. The dynamic thesaurus analyzes and processes the meanings of questions and texts and extracts meaningful keywords from them, then collates the extracted keywords for data retrieval.

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CONTENTS	For this reason, we have developed the system functions to analyze and process the text meanings of both questions and texts, and we carried out evaluation experiments abstracts of Japanese publications based on the collected questions to evaluate effectiveness of this system functions. We have concluded, compared to the conventional keyword indication retrieval method, the retrieval functions with this system can be considerablely improved because the direct retrieval is possible. This system could largely contribute to database construction because this system does not require keyword provision in advance.

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