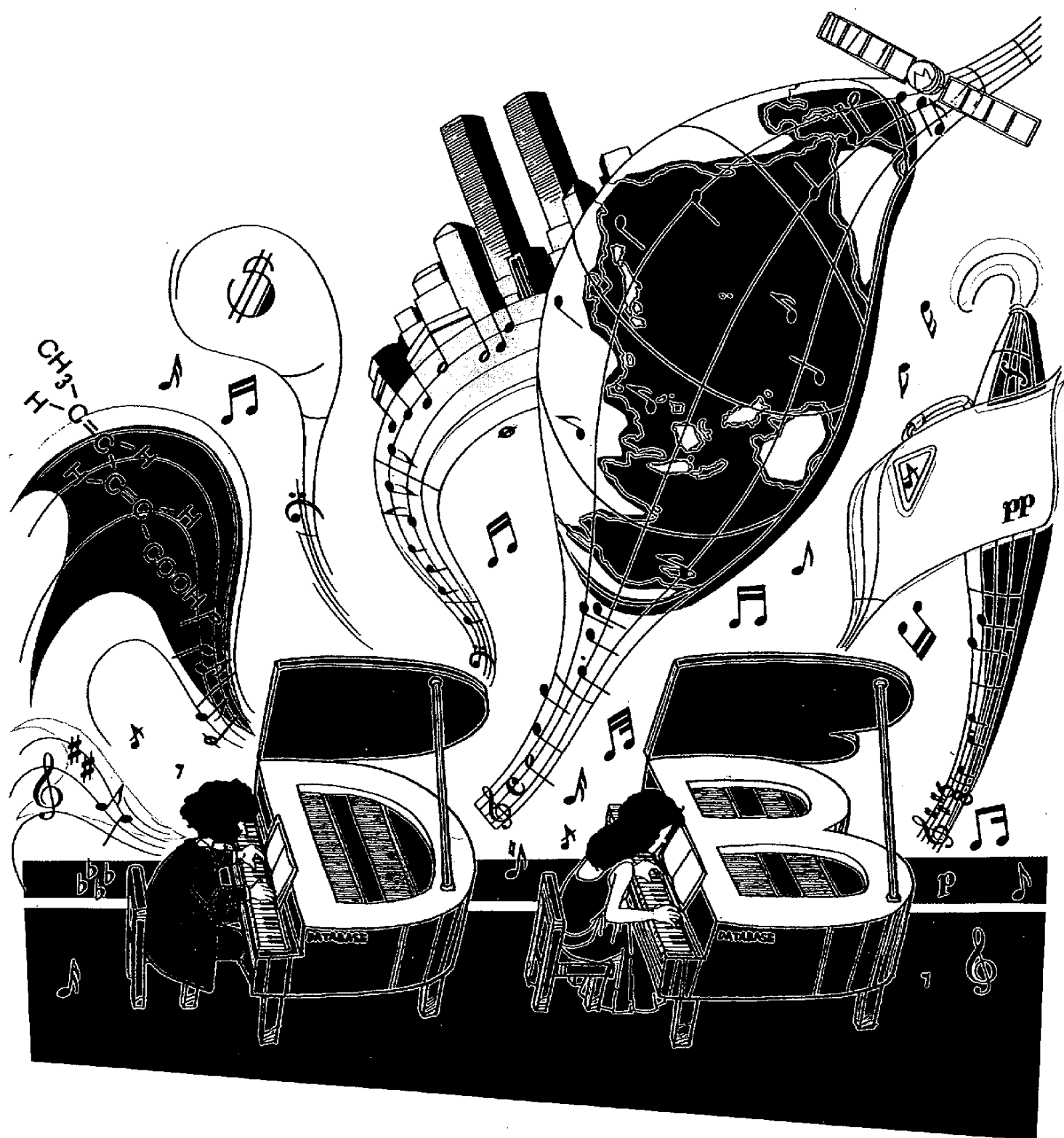


# Databases in Japan 1993



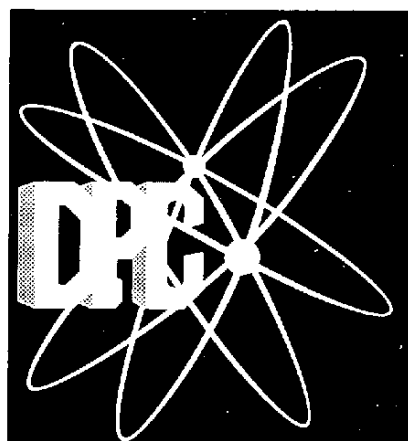




Database Promotion Center, Japan (DPC) was established in 1984 with the information supplies, users and related industrial circles approved by the government. DPC is a not-for-profit organization aimed at the promotion, research, production and dissemination of database services worldwide.

Copyright © 1993 by Database Promotion Center, Japan. All rights reserved. No part of this book may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without prior permission in writing from the publisher. All inquiries should be addressed to Database Promotion Center, Japan, 7th Fl. World Trade Center Bldg., 2-4-1, Hamamatsu-cho, Minato-ku, Tokyo, 105 Japan. Printed in Japan.

# **Databases in Japan 1993**



Database Promotion Center, Japan



## **CONTENTS**

### **I Executive Summary**

|                                                            |    |
|------------------------------------------------------------|----|
| 1. Introduction .....                                      | 1  |
| 2. Database Trends in Japan .....                          | 2  |
| 3. Database Trends Overseas .....                          | 5  |
| 4. Database Services with CD-ROM .....                     | 6  |
| 5. Trends of Inhouse Databases .....                       | 8  |
| 6. Increased Regional Use of Databases .....               | 9  |
| 7. Database Promotion Policies of Government Offices ..... | 10 |

### **II Trends of the Database Service Market**

|                                                                            |    |
|----------------------------------------------------------------------------|----|
| 1. Database Classification .....                                           | 13 |
| 1.1 Classification by Application .....                                    | 13 |
| 1.2 Classification by Supply Medium .....                                  | 13 |
| 1.3 Classification by Form .....                                           | 13 |
| 1.4 Classification by Category .....                                       | 14 |
| 2. Trends of Database Sales .....                                          | 15 |
| 3. State of Database Distribution .....                                    | 17 |
| 3.1 Domestic Databases Increase by 33% to Exceed 2,600 .....               | 17 |
| 3.2 Business Databases Represent the Largest Category .....                | 17 |
| 3.3 "Newspapers, Journals and News" Databases Top Sub-Categories .....     | 19 |
| 3.4 Slight Increase in Online Services Even Among Domestic Databases ..... | 19 |
| 4. Comparison of Database Conditions in the U.S. and Japan .....           | 22 |
| 4.1 Comparison of Database Industry Strength .....                         | 22 |
| 4.2 Comparison of the Database Attributes .....                            | 24 |

---

### **III Trends of the Database Service Industry**

|                                                        |    |
|--------------------------------------------------------|----|
| 1. Present State of Database Services.....             | 25 |
| 1.1 Attributes of the Replying Companies.....          | 26 |
| 1.2 Entering into the Database Industry.....           | 26 |
| 1.3 Positioning of the Database Service Industry ..... | 28 |
| 1.4 The Sales of Database Service .....                | 29 |
| 1.5 Database Supply Methods .....                      | 32 |
| 1.6 Problems with Database Production .....            | 32 |
| 1.7 The Situation of Overseas Supply.....              | 33 |
| 1.8 Future Problems .....                              | 35 |

### **IV Present State of Use of Commercial Databases**

|                                                                   |    |
|-------------------------------------------------------------------|----|
| 1. Outline of Survey and Methodology .....                        | 37 |
| 2. Actual Result and Scheduled Database Usage .....               | 37 |
| 2.1 Annual Usage Costs for Database.....                          | 37 |
| 3. The Types and Contents of Most-Used Commercial Databases ..... | 39 |
| 3.1 Most-Used Database Vendors and Database Files.....            | 39 |
| 3.2 Online Database Utilization Ratio .....                       | 41 |
| 3.3 Categories of Frequently Used Databases .....                 | 43 |
| 4. Online Database Utilization.....                               | 43 |
| 4.1 Method of Using Online Database.....                          | 43 |
| 5. Other Forms of Database Utilization.....                       | 44 |
| 6. Issues on Pricing and Utilization.....                         | 44 |
| 6.1 Pricing Issues .....                                          | 44 |
| 6.2 Utilization Issues.....                                       | 44 |
| 7. Increased Database Utilization by PC Network Services.....     | 45 |
| 8. Increased Database Utilization with CD-ROM .....               | 46 |
| 8.1 Utilization of Information on CD-ROM .....                    | 46 |
| 8.2 Categories of Information Use.....                            | 47 |
| 8.3 Currently Used CD-ROM Software.....                           | 47 |

## **V Database Utilization and Education at Universities**

|                                                                                 |    |
|---------------------------------------------------------------------------------|----|
| 1. Survey Outline and Methodology.....                                          | 49 |
| 2. Implementation Status of Database Utilization Education.....                 | 49 |
| 2.1 Utilization Education being Implemented at More Than 25% of Universities... | 49 |
| 2.2 Description of Classroom Education .....                                    | 50 |
| 2.3 Utilization Education at University Libraries .....                         | 52 |
| 3. Database Utilization Status.....                                             | 52 |
| 3.1 Database Utilization in Classes.....                                        | 52 |
| 3.2 Databases Used at Libraries.....                                            | 54 |

## **VI Database Promotion Policies of the Ministry of International Trade and Industry (MITI)**

|                                                                                                                |    |
|----------------------------------------------------------------------------------------------------------------|----|
| 1. Overall Database Production Measures.....                                                                   | 57 |
| 1.1 Development Program Surveyed for Important Databases .....                                                 | 57 |
| 1.2 Database Globalization .....                                                                               | 58 |
| 1.3 Research for Database Production and Promotion .....                                                       | 59 |
| 1.4 Implementation of the Database Directory System .....                                                      | 60 |
| 1.5 Tax Measures for Database Producers.....                                                                   | 60 |
| 1.6 Support of Development of Efficient Database Operation Systems.....                                        | 61 |
| 1.7 Support for Database Production in the Private Sector .....                                                | 61 |
| 1.8 Production of Public Databases and Increased Access to<br>Government-Owned Data by the Private Sector..... | 62 |
| 2. Promotion of Regional Databases (New Media Community Concept) .....                                         | 62 |
| 2.1 Ideology of the Concept.....                                                                               | 62 |
| 2.2 Financial Support for System Construction.....                                                             | 63 |
| 3. Research and Development of Interoperative Database Systems .....                                           | 63 |
| 4. Information Service for Small and Medium-Size Businesses .....                                              | 64 |
| 5. CD-ROM Unexamined Patent Gazettes .....                                                                     | 65 |

---

## Appendix

|                                                                    |     |
|--------------------------------------------------------------------|-----|
| 1. State of Globalization .....                                    | 69  |
| 2. Problems Encountered by Database Services in Globalization..... | 100 |

## LIST OF FIGURES

| Figure                                                                                                            | Page |
|-------------------------------------------------------------------------------------------------------------------|------|
| 1-1 Growth in the Usage Rate of PC Network Services and Database Services.....                                    | 4    |
| 1-2 Growth in Usage Rates by Menu of PC Network Services.....                                                     | 4    |
| 1-3 Growth in Supply Rates and Usage Rates of CD-ROM Databases .....                                              | 8    |
| 2-1 Growth in Annual Sales of the Database Service Industry .....                                                 | 15   |
| 2-2 Growth in Sales of the Database Service Industry in Comparison with<br>Same Months of the Previous Year ..... | 16   |
| 2-3 Databases Accessible in Japan .....                                                                           | 18   |
| 2-4 Graphical Comparison of Databases in the U.S. and Japan (1991) .....                                          | 23   |
| 3-1 Annual No. of Entries Into the Database Industry .....                                                        | 27   |
| 3-2 Transition of Companies Registered in the "Database Directory" .....                                          | 27   |
| 3-3 Positioning of Databases Services.....                                                                        | 28   |
| 3-4 Distribution of Annual Average Growth Rate of Database Sales (Average of<br>Past 3 Years).....                | 30   |
| 3-5 Distribution of Expected Annual Average Growth Rate of Database Sales<br>Over Next 5 Years (Forecast) .....   | 30   |
| 3-6 Problems Factors Involved with Database Production (N=80; multiple replies).....                              | 32   |
| 3-7 Present State of Overseas Supply .....                                                                        | 33   |
| 3-8 Future Prospects of Overseas Supply .....                                                                     | 33   |
| 3-9 Growth in Databases Supplied Overseas .....                                                                   | 34   |
| 3-10 Problem of Overseas Database Supply (N= 94, Multiple Replies).....                                           | 35   |
| 3-11 Future Problems Involved with Database Services (N= 141, Multiple Replies) .....                             | 36   |
| 4-1 Annual Usage Costs of Actual Result of 1991 by Company Size (N=385) .....                                     | 39   |
| 4-2 Categories of Frequently Used Databases (Multiple Replies) .....                                              | 43   |
| 5-1 Locations of Database Utilization Education (Multiple Replies) .....                                          | 51   |
| 5-2 Types of Texts Used in Database Utilization Education (Multiple Replies).....                                 | 51   |
| 5-3 Annual Costs of Practical Exercises in Database Utilization (N=103).....                                      | 52   |
| 6-1 Flow Chart of the Development Program Surveyed for Important Databases .....                                  | 58   |
| 6-2 Procedures for the Database Reserve Fund.....                                                                 | 61   |

|     |                                                                             |    |
|-----|-----------------------------------------------------------------------------|----|
| 6-3 | Schematic Diagram of Supply of Patent Information .....                     | 65 |
| 6-4 | File Summary of Patent Gazettes and CD-ROM Unexamined Patent Gazettes ..... | 66 |

## LIST OF TABLES

| Table                                                                                                                              | Page |
|------------------------------------------------------------------------------------------------------------------------------------|------|
| 1-1 International Comparison of Database Service Market Size (1991).....                                                           | 5    |
| 1-2 Overseas Market Sizes of CD-ROM Database Services (1992).....                                                                  | 7    |
| 2-1 Annual Sales by Various Information Service Sectors.....                                                                       | 14   |
| 2-2 Transition of Database Distribution Ratio by Category (Actual No. of Database).....                                            | 18   |
| 2-3 Distribution by Category of Databases Accessible in Japan (Actual Number of Databases) .....                                   | 20   |
| 2-4 Comparison between Japanese and U.S. Databases (1991).....                                                                     | 24   |
| 3-1 Comparison of the Business Types of Database Service Industry .....                                                            | 25   |
| 4-1 Annual Average Usage Costs for Database by Company Size .....                                                                  | 38   |
| 4-2 Highly Utilized Vendors, According to Number of Replies (Aggregate of top three vendors of utilization from each replier)..... | 40   |
| 4-3 Files with High Utilization Frequency (N=417, Multiple Replies) .....                                                          | 41   |
| 4-4 Ranking of Vendors by No. of Contracted Users.....                                                                             | 42   |
| 4-5 Comment of Functions, Operability and Commands of Commercial Database (Multiple Replies) .....                                 | 45   |
| 4-6 Frequency-Used PC Network Service Menus (Multiple Replies) .....                                                               | 46   |
| 4-7 Currently Used CD-ROM Software (N=96, Multiple Replies) .....                                                                  | 47   |
| 5-1 Online Databases Frequently Used at the University Classes (N=323, Multiple Replies) .....                                     | 53   |
| 5-2 Package Databases Frequently Used in Classes (N=323, Multiple Replies) .....                                                   | 53   |
| 5-3 Online Databases Frequently Used at University Libraries (N=635, Multiple Replies) .....                                       | 55   |
| 5-4 Package Databases Frequently Used at University Libraries (N=635, Multiple Replies) .....                                      | 55   |
| 6-1 Development Program Surveyed for "Important Databases" in 1992 .....                                                           | 59   |
| Appendix-1 Number of Japanese Databases Accessible from Overseas.....                                                              | 69   |
| Appendix-2 Japanese Databases Accessible Overseas (1993:Producers) .....                                                           | 71   |
| Appendix-3 Japanese Databases Accessible Overseas (1993: Distributors).....                                                        | 79   |
| Appendix-4 Japanese Database Planned for Overseas Expansion .....                                                                  | 94   |

---

|            |                                                         |    |
|------------|---------------------------------------------------------|----|
| Appendix-5 | Address and Contacts (1993 Producers/Distributors)..... | 95 |
|------------|---------------------------------------------------------|----|

## **I Executive Summary**

### **1. Introduction**

1992 was a year that witnessed global economic recession, and also was a year for "restructuring" and "new frameworks". Although some improvements were seen in the U.S. economy towards the end of the year, the year of 1992 ended with economic slowdowns in Europe and Japan.

President Clinton took office in the U.S. advocating "change". With Vice-President Gore proposing the concept of an information superhighway, the new administration is attempting to develop a high-tech industry in the U.S. with a new perspective. In Europe, Germany is facing difficulties in rebuilding its economy following the unification with the former East Germany, while Russia and many other former Communist bloc countries are struggling to create the new nations and the societies toward transition to democratic systems. Each country is seeking its new framework following the Cold War.

Although in Japan, the first quarter of 1991 (January through March) was considered to represent the peak of the economy, the economic recession followed has reached a very severe state. Although the business slowdown was initially limited to the industries such as real estates, securities and banks, it has rapidly spread to every industry. In 1992, sales plummeted in almost all industries. Due to the growing number of corporations recording deficits, considerable efforts are being taken to make adjustments in employment.

Information service industry, which has previously demonstrated rapid growth without having suffered any business slowdown, is no exception. According to "the Monthly Report of Current Survey of Selected Service Industries" of the Ministry of International Trade and Industry (MITI), sales of the information service industry in 1992 showed negative growth for the first time, decreasing by 0.2% from the previous year. Database service sales also dropped by 1.9% during the same period.

Many still hold very positive views concerning the future for databases. This is because a role of databases is expected to be more important in the future as an information infrastructure for strategic utilization of various types of information. According to the survey conducted by the Database Promotion Center, Japan (DPC) during the fall of 1992 when an economic slowdown became quite serious, 67.6% of database service companies still expected the annual average growth rate over the next five years to be at least in the double digits. The average growth rate of the companies was 28.1%, and the median was 15%.

Some analysts say that this recession is the worst one after the World War II, even surpassing the depression of 1965.

There is a growing view that this recession does not simply originate in the result of an

---

economic cycle, but rather in the result of structural changes both in the society and the economy. The huge implied losses related to real estates and securities by many financial institutions due to the so-called collapse of a bubble economy is an important point that differs dramatically from the previous recessions. In addition, the framework of the society of "materialism" has become bogged down. It is also the one of the factors for the today's recession. There are some aspects in the form of a decline in demand reflecting excessive consumption during the bubble economy, as well as the aspects in the form of the changes in the demand structure itself.

Various steps are being taken to accommodate the structural changes in the economy. In addition to the conventional public projects which are used by the government to revamp the economy, focusing in the civil engineering and construction industries, a philosophy has also been worked out that calls for the establishment of new social capital based on the information-related investment. DPC has established the Ad Hoc Committee for Strategic Information Utilization as a part of its action programs to help improve business conditions. It initiated a study of policies for promoting the information utilization by government and municipal offices based on new concepts. Instead of the conventional large-volume, repetitive type of routine information processing, the study is conducted for introducing strategic information processing, such as making drafts of policies, making decisions and so on.

## **2. Database Trends in Japan**

The market size of the database service industry in Japan increased by 14.5% over the previous year to ¥216 billion in 1991, topping the ¥200 billion barrier for the first time. It means that this industry has grown by 3.5 times in comparison with the level of ¥60.7 billion 10 years ago. This figure is obtained from the Survey of Selected Service Industries of MITI, and it accounts for 3.1% of the total sales of the entire information service industry (¥6.8861 trillion), including software, data processing and so on.

Among equivalent examples of markets of roughly ¥200 billion sales are radio broadcast advertising costs, direct mail advertising costs, home telephones, instant coffee and instant noodles.

Provided by dividing these services into online services and offline services such as CD-ROM and magnetic tape, online services generated sales of ¥149.4 billion, accounting for 69% of the total. Offline services accounted for 31%, generating sales of ¥66.5 billion. Growth rate from the previous year was 15.8% in online services and 11.6% in offline services.

The number of commercial databases available in Japan has increased steadily, and the access environment is expanding. According to the Database Directory (issued in October, 1992) of MITI, the number of commercial databases distributed in Japan has increased by 14.1% from the previous year to 2,686. Since there were only 456 such databases in 1982

when the survey started, the above means that the number of commercial databases has increased more than six-fold during the past nine years.

Looking at these commercial databases by category, 39.5% (the number of databases: 1,062) is in the category of business, 29.6% (795) is in the category of natural science and technology, 26.8% (721) is in the general category, and 3.5% (93) is in the category of social science. Looking at growth rates in comparison with the previous year, business databases demonstrated a remarkable growth rate of 18.5%, followed by general databases by 16.1%, natural science and technological databases by 7.7%, and social science databases by 4.5%. Thus, databases in the category of business and general demonstrated the highest growth.

Looking at database producers in Japan and those overseas, there are 892 "domestic databases" produced in Japan, accounting for 33.2% of the total, while there are 1,794 databases produced overseas, accounting for 66.8%.

Database services have the goal of providing "a big amount of information" to "as many people as possible". Examples of recent trends in this context include an increase in the number of factual databases, and especially in image databases, and usage of databases by PC network services.

Databases originally came about in the forms of reference databases (literature databases). With restrictions on the performance and the capacity of computers, they have been used as a means of searching for information. However, users usually don't desire to find out where information is located, but rather to seek information itself. Taking newspaper articles, rather than being concerned with when and in what newspaper the article was carried, the majority of users desire to read the article itself.

As a method to respond to these needs, factual databases have increased that provide users with the original information itself. Database Directory shows that the ratio of reference databases to factual databases in 1982 was 53:47, indicating the number of reference databases is larger. However, this turned around in 1986. The difference became further pronounced in 1991 with the above ratio becoming 28:72 and the number of factual databases being much larger.

At the present, the majority of factual databases are supplied in the forms of text, and tables, diagrams and photographs are omitted. However, in terms of ordinary publications, those containing only text are exceptional. Diagrams and photographs are inserted in both newspapers and magazines.

The number of facsimile services has grown considerably as a means of supplying original information with images. With facsimile, original information itself, including diagrams and photographs, is recorded in the forms of visual images. When information is retrieved, image data is sent to the users by facsimile. This allows the users to see newspaper and magazine articles exactly in a manner in which they were carried. Thus, database services have finally got similar of expressions with the actual publications.

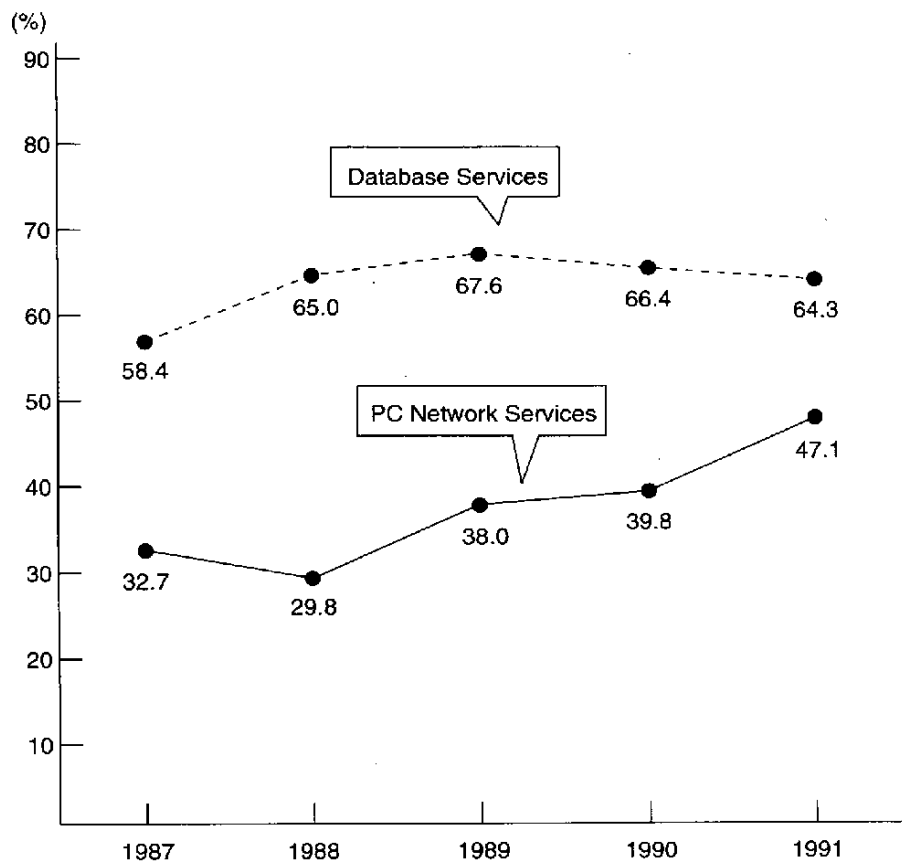


Figure 1-1 Growth in the Usage Rate of PC Network Services and Database Services

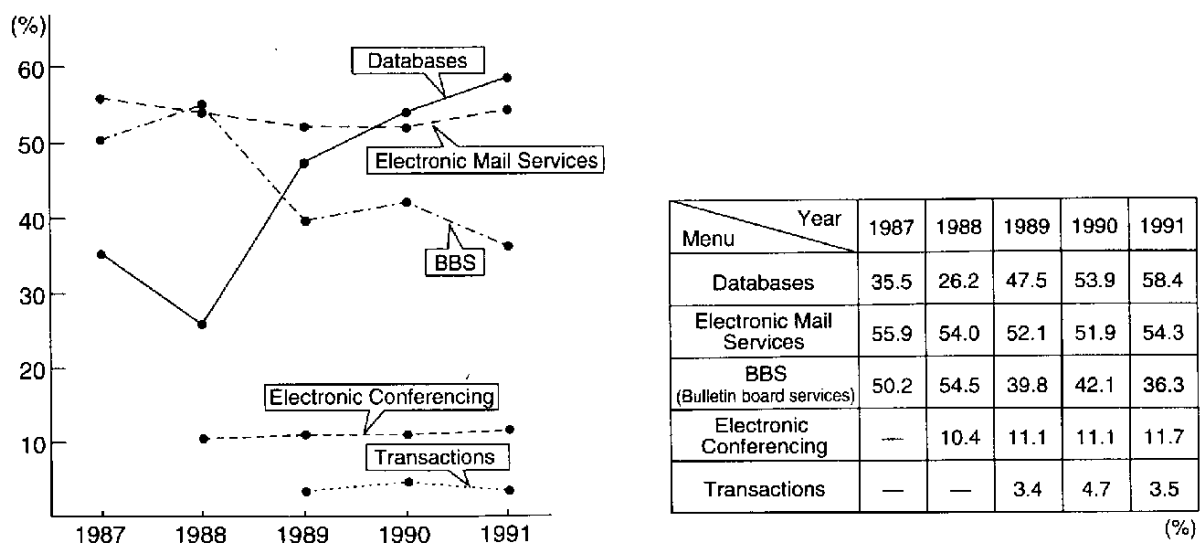


Figure 1-2 Growth in Usage Rates by Menu of PC Network Services

PC network services become to play a major role for providing information to as many people as possible. In addition to the usage in which specific databases are referred frequently for specific tasks and specialized fields, there is another usage in which various databases are referred occasionally. Database services respond more to the needs of the former, while PC network services respond more to the needs of the latter.

According to the results of the Survey of User Awareness of Database Services carried out every year by DPC questioning to private corporations, public institutions and so on, the proportion of the corporations and public institutions which use PC network services increases from 32.7% in 1987 to 47.1% in 1991 (Figure 1-1). The proportion of those corporations and public institutions using database services remains unchanged after 1988 at roughly 65%.

58.4% of those corporations and public institutions that use PC network services shows that they frequently use databases. Databases are more frequently used menu than electronic mail services and bulletin board services (BBS) (Figure 1-2). In particular, 63.8% of small and medium-size businesses use databases frequently, with PC network services oriented towards databases use being the major usage. Moreover, this proportion increases every year.

### 3. Database Trends Overseas

It is difficult to compare and analyze database services accurately on an international scale. Surveys of database services in the U.S. and Europe were commissioned to LINK Resources Corporation (LINK). The scopes and methods of these surveys are different for each country and region. For example, LINK includes seating reservation services and product marketing services, which are normally excluded from the category of database services in Japan, and the surveys use the term, "electronic information services" instead of "database services".

**Table 1-1 International Comparison of Database Service Market Size (1991)**

| Country/Region         | Database Sales (¥100 million) | Monetary Usage Amount Per Person (¥) |
|------------------------|-------------------------------|--------------------------------------|
| U.S. (Incl. Canada)    | 12,761                        | 5,050                                |
| Japan                  | 2,160                         | 1,743                                |
| U. K.                  | 2,157                         | 3,760                                |
| France                 | 613                           | 1,074                                |
| Germany                | 482                           | 607                                  |
| Western Europe (Total) | 4,451                         | 1,292                                |

Note: Currency conversions made at the rate of \$1= ¥125. Figures for countries and regions of Western Europe refer to the total amount for online service and CD-ROM, while the monetary usage amount per person was calculated by dividing database sales by population.

Source: Sales in Japan were obtained from the Survey of Selected Service Industries, MITI, overseas database sales were obtained from LINK Resources Corporation, and population figures were taken from United Nations statistics.

---

In addition, the targets of the surveys in Europe were limited to online services and CD-ROM.

Although these ambiguous definitions exist, Table 1-1 attempts to provide a comparison of market sizes of database services in North America (including Canada), Western Europe and Japan. Database sales are converted into yen at the rate of \$1=¥125. The amount of consumption per person is calculated by dividing database sales by the population. Figures for Japanese market are obtained from the Survey of Selected Service Industries of MITI, while figures for overseas market are obtained from surveys conducted by LINK Resources Corporation. All figures shown are for 1991.

This table shows that the U.S. ranks far above other countries in terms of sales and amount of consumption per person. In terms of market size, database services in the U.S. have already grown into a ¥1 trillion industry, and many firms generate high earnings. The U.K. ranks in second place behind the U.S. in terms of amount of consumption per person. The higher ranking of the U.K. comes along the international financial markets in London and the U.K. holds the lead in database services in the category of finance. Japan ranks in third place above France, Germany and the average of Western Europe.

Sales in 1992 of electronic information services (database services) in the U.S. are expected to increase only by 6.9% over the previous year. The annual average growth rate for the five year period from 1991 to 1996 is expected to be 8.5%. This corresponds to decrease of 2 points in comparison to the prediction one year ago (10.5%). This decrease is considered to have been caused by economic recession and a growing trend towards market maturity.

In contrast, the annual average growth rate for the four year period from 1991 to 1995 is expected to be 15.9%. In addition, the average of the "5-Year Outlooks" of database service companies in Japan is 28.1% (median: 15%). Europe and Japan which are at early stages in terms of database development are expected to demonstrate higher growth in the future. Aggressive perspectives of Japanese database service companies are especially conspicuous.

#### **4. Database Services with CD-ROM**

In the U.S. and Europe, the use of CD-ROM as a means of supplying database services becomes increasingly popular. Even looking at database trade exhibitions held overseas, the number of trade exhibitions in which the word "CD-ROM" is contained increases. For example, the U.S. database trade exhibition held in Chicago in October 1992 was entitled, "ONLINE/CD-ROM '92", while "ONLINE/CD-ROM INFORMATION '92" was held in London in December.

According to the surveys conducted by LINK Resources Corporation, sales of electronic information services with CD-ROM in North America (including Canada) are expected to reach \$950 million (¥118.8 billion) in 1992 (Table 1-2). This corresponds to 8.7% of the total sales of

**Table 1-2 Overseas Market Sizes of CD-ROM Database Services (1992)**

| Country/Region         | Sales (¥100 million) |
|------------------------|----------------------|
| U.S. (Incl. Canada)    | 1,188                |
| Italy                  | 156                  |
| U. K.                  | 69                   |
| France                 | 63                   |
| Germany                | 63                   |
| Western Europe (Total) | 388                  |

Note: Exchange rate: \$1= ¥125

Source: LINK Resources Corporation, 1992

electronic information services. In addition, sales are forecasted to achieve rapid growth in excess of an annual rate of 40% in the first half of the 1990's.

Sales of electronic information services with CD-ROM in Western Europe are expected to be \$310 million (¥38.8 billion) in 1992. This corresponds to a level of 8.0% with respect to online services. The forecast for the annual average growth rate in the first half of the 1990's is 46.8%.

What is the reason for the rapid widespreading of CD-ROM? Some reasons for this include: (1) low costs for both the suppliers and the users and, (2) ease of use in the forms of image and multimedia databases.

CD-ROM allows the users to use databases based on a fixed fee system that differs from that of online services. Some service companies such as UMI in the U.S., supply documents in the form of images using CD-ROM.

CD-ROM allows a large amount of information (approximately 540 megabytes, equivalent to roughly one year's worth of newspaper articles in terms of text data) to be recorded in a single small disc measuring 12 centimeters in diameter (the same size as music CD). The production cost per disc, although depending on the number of discs, is around several hundred yen (excluding information cost).

Although widespreading of CD-ROM in Japan has been slow in comparison with that overseas, the environment for their widespreading gradually improves, and the amount of use grows steadily. According to a survey conducted by DPC, the proportion of members of the database service industry supplying databases on CD-ROM was 19.6% in 1989, 24.8% in 1990 and 26.3% in 1991, indicating an increase every year (Figure 1-3). In addition, even looking at the usage rate of CD-ROM databases, this figure has increased for four consecutive years from a level of 7.5% in 1988, reaching the level of 15% in the newest survey conducted in 1991. Thus, this usage rate reached the level that is twice as high as the level just three years ago.

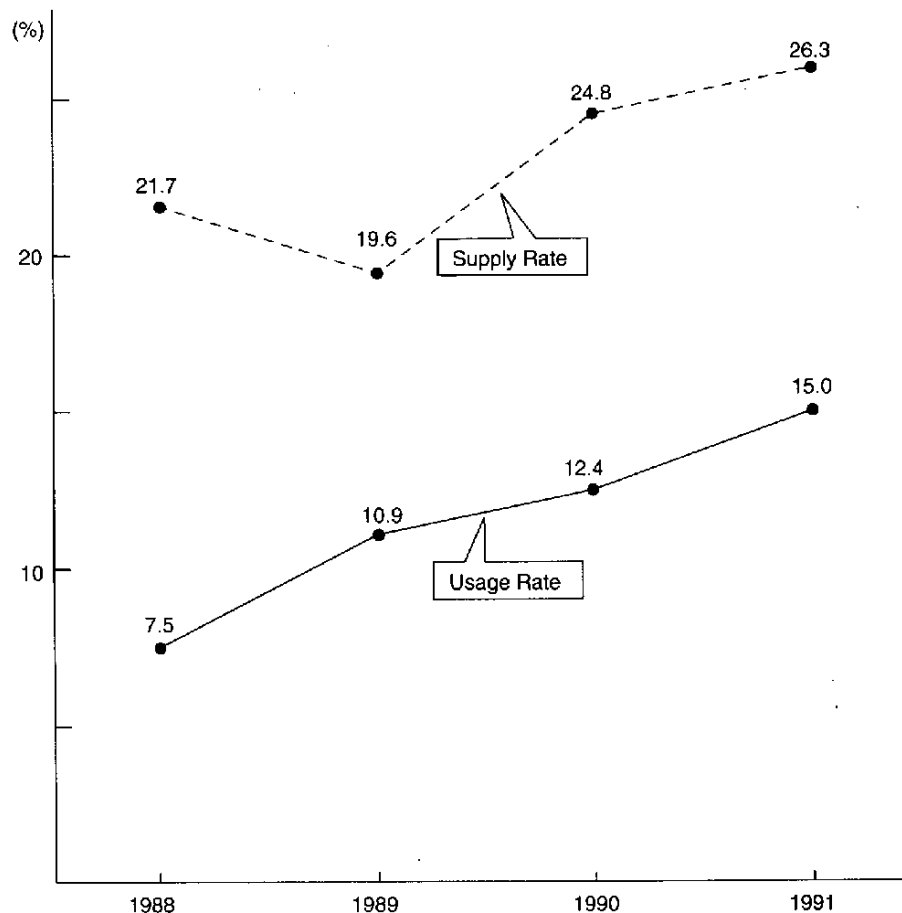


Figure 1-3 Growth in Supply Rates and Usage Rates of CD-ROM Databases

## 5. Trends of Inhouse Databases

The year 1992 was also a transition period for inhouse databases (located within corporations). Computer sales fell below the level of the previous year for the first time in 17 years, and sales of the information service industry are expected to show negative growth for the first time.

The demanding management environment has brought about a change in the requirements for inhouse databases.

According to the "Survey of User Awareness of Database Services" conducted in the fall of 1992 by DPC, 63.1% of the institutions surveyed already built or acquired inhouse databases. This ratio has remained essentially unchanged over the past several years. The majority of institutions requiring inhouse databases already use databases in some form.

However, there have been major changes in the purposes for building those inhouse databases. The proportion of inhouse databases built for the purpose of sales promotion and cost reduction clearly rises. In comparison with the replies obtained from the survey conducted two years ago in 1990, "increased efficiency of distribution and shipping" increased by 4.3

points to 21.5%, "increased efficiency of order receiving and placement operations" increased by 3.9 points to 31.5%, and "increased efficiency of sales promotion" increased by 3.4 points to 34.7%. On the other hand, "effective utilization of reference materials and inhouse information" (43.8%) decreased by 3 points. There has been a considerable increase in the use of inhouse databases for sales promotion, which leads directly to increasing earnings, and for increasing efficiency in shipping and ordering processing, which are directly linked with reducing the costs. Moreover, there has been a decrease in the number of systems whose performance is not easily seen.

Under today's recession, this does not mean that there has been a reduction in the size of needs for information. In order to promote to build inhouse databases with growing awareness of costs, it is necessary to understand and make active use of the followings: (1) downsizing, (2) end-user computing (EUC), and (3) outsourcing.

## **6. Increased Regional Use of Databases**

Database services in local and regional newspapers are considered to be important factors for promoting regional information usage.

Database services of newspaper articles are those of the most frequently used categories, considering from nationwide. In addition, since newspaper publication becomes computerized, building databases can be done relatively easily. Thus, databases are expected to fulfill the role of a "pioneer" that is able to improve the information transmission function of regional areas and to lessen the "information gap" between Tokyo metropolitan area and other regions.

Initiated with the "KD" database (Tohoku region) of Kahoku Shimpō Press that started services in August 1992, numerous other firms now supply database services, including The Hokkaido Shimbun (Hokkaido), The Chunichi Shimbun (Chubu region), The Ehime Shimbun (Shikoku), Chugoku Shimbun, Ltd. (Chugoku region) and The Nishi Nippon Shimbun (Kyushu).

PC networks attract more attentions as networks which transfer this type of information from regional areas. In addition, the number of regional public organizations servicing PC networks, such as "The Third Sector", increases as a new means of regional communication.

According to the Survey of Personal Computer Networks conducted by the New Media Development Association, there were 1,877 PC networks as of the end of June 1992, and 260 of those networks are operated by government and municipal offices, the third sector, and public organizations such as the Chamber of Commerce and Industry.

In April 1992, the image PC network, "K-NET Inc.", the third sector jointly funded by the government and the private sectors, started services in Kanagawa. This service attracts considerable attentions. In addition to promoting use at home through familiar images created by NAPLPS, K-NET makes housewives participate in the system as consultants for PC network

---

usage. It also aggressively attempts to promote PC network usage by lending communication terminal modems to the users in free charge.

Despite these efforts, there is no change in the situation in which database services still tend to be concentrated in Tokyo. Database service sales by offices located in Tokyo account for 83.4% of nationwide sales. Although this figure is slightly down from the last year's level of 84.0%, the gap between Tokyo and other areas still remains large.

## **7. Database Promotion Policies of Government Offices**

Policies relating to databases in Japan began with the establishment of the Japan Information Center of Science and Technology (JICST) in 1957. Later, as the information industry began to demonstrate rapid growth in the 1980's, several proposals were made from both inside and outside government offices that resulted in the drafting of numerous database promotion policies. In addition to having made vast contributions to promotion of the organization of information processing within government agencies, increasing efficiency of administrative tasks, and improvement of administrative services, a series of database related policies also greatly contributed to development and expansion of the database industry in the private sector as well, there are several proposals that still wait to be implemented. One of those proposals is the supply of data retained by the government to the private sector. Although specified statistics are already being supplied to the private sector based on the Statistics Act, there is a large amount of administrative data produced in clerical processing within government agencies that remains dormant despite having been computerized into databases. Moreover, a large amount of information can be expected to be actively used in the private sector, examples of which include geological data and research data. Database construction and maintenance require huge costs. In that respect as well, information retained by government agencies can be considered to be a shared asset available to anyone throughout the country. Thus, the prompt creation of a system that allows those information to be widely supplied to the private sector is strongly desired. Furthermore, the publication of examined patents retained by the Japan Patent Office on January 8, 1993 with CD-ROM is a major step forward in this sense. It is expected that this type of action will quickly spread to other government agencies in near future.

The following provides an introduction to promotion policies and usage examples by four agencies consisting of the Ministry of International Trade and Industry (MITI), Economic Planning Agency, Ministry of Posts and Telecommunications and Ministry of Home Affairs.

MITI has taken steps for the comprehensive creation of databases through eight policies (consisting of the survey of important database development projects, international accommodation, the survey for promotion of database establishment, implementation of a directory system, tax measures for database construction, support of construction of private

databases, construction of public databases and expansion of supplying of government retained data to the private sector). In addition, MITI also conducts the survey of trends regarding information supply services.

The Economic Planning Agency has established seven database systems (consisting of database systems for the Japanese economy, regional economy, world economy, the World Bank, and statistical information, as well as the common information retrieval online system and the online networks between the Economic Planning Agency and MITI). These database systems allow the agency to be engaged in planning, drafting and adjustment of comprehensive and fundamental short-term as well as medium and long-term policies relating to the Japanese economy through efficient processing of statistical data obtained from sources both within and outside Japan.

The Ministry of Posts and Telecommunications tries to expand the size of the database market through the promotion of a foundation for the establishment of advanced data communications and the establishment of an infrastructure for online database services. Accompanying those efforts, it also deploys various other policies, including the promotion of government subsidies to the private sector and data communications for regional areas. In addition, it supervises the creation of an online database directory to facilitate access of online databases in an effort to create an effective database usage environment. Furthermore, following its promotion of the Teletopia Plan in 1983, this Ministry tries to promote the use of databases in regional areas, having designated 109 regions as Teletopia regions by September 1992.

The Ministry of Home Affairs (Local Governments) proceeds with advanced utilization of computers through the establishment of online networks and the construction of databases in near future. Moreover, it also proceeds with the creation of networks accompanying the rapid proliferation of personal computers and other OA equipments. Recently, it also started developing many information service systems based on regional societies, including those systems for not only processing internal information, but also for local resident services. There are also some examples of database systems that are actually being operated by regional public organizations.



## **II Trends of the Database Service Market**

### **1. Database Classification**

Various definitions are used for the classification of databases throughout the world. In Japan, databases are defined in the Copyright Law as follows: "an aggregate of information such as articles, numerals or diagrams, which is systematically constructed so that such information can be searched for with the aid of a computer." (Article 2, paragraph 1, item 10-3).

According to the definition, any system that contains information of any type, whether text, numerical or graphical, and is systematically computerized so as to allow retrieval of that information by computers can be called a database. In the U.S., database services are commonly referred to as electronic information services. As indicated by the title itself, this refers to all forms of services which are provided for computerized information in diversity of media services.

Databases are classified into several types according to their forms and applications. The following provides an introduction to some of those major classifications.

#### **1.1 Classification by Application**

Databases that are classified according to their application consist of commercial databases and inhouse databases. Commercial databases refer to those databases that supply information for a fee. These databases can be used by anyone with fees. On the other hand, inhouse databases are used only internally within the corporations, industries, academic societies, government offices and so on.

#### **1.2 Classification by Supply Medium**

This classification focuses on the form in which databases are supplied, and divides databases into either online or offline types. The former allows up-to-date information to be obtained on a real-time basis by connecting database host machine with terminals using communication lines.

The latter is also referred to as a stand-alone type or package type. The databases are started on magnetic tapes (MT), floppy discs (FD), CD-ROM and so on.

#### **1.3 Classification by Form**

Database classification generally refers to the classification by form. In this classification

system, databases are divided into reference databases and fact databases. The former are literature databases, while the latter are source databases.

Reference databases contain publication information and abstracts of newspaper articles and theses, and supply guideline information for the original literatures. On the other hand, fact databases contain the original information itself. In addition, besides fact databases containing the full text of the literature, they also contain static pictures, animated images, voice recordings and so on. Furthermore, there are growing expectations being placed on multimedia databases that supply information in the forms of a mixture of the above forms.

#### 1.4 Classification by Category

This type of classification focuses on the category of the information of databases. In Japan, the classification by category of the "Database Directory" of MITI is used most popularly.

This directory provides with four major classification categories consisting of (1) General, (2) Natural Science and Technology, (3) Humanities, and (4) Business. In addition, databases are also classified by providing respective sub-categories by topic for each of the major categories.

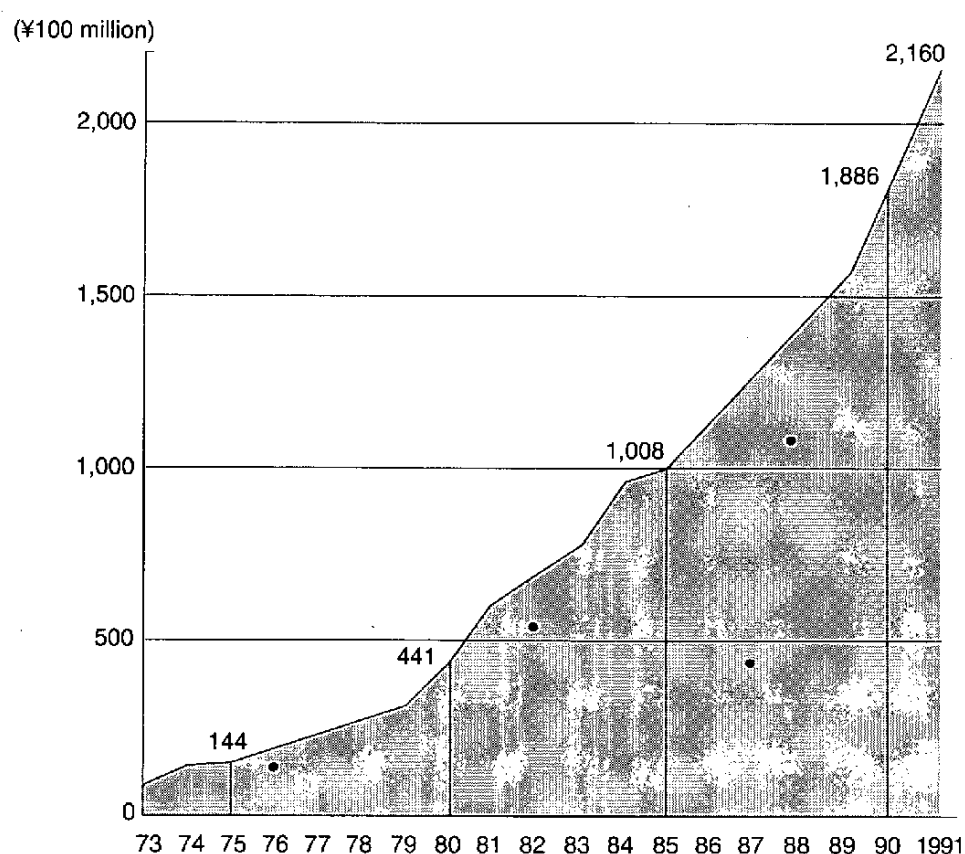
**Table 2-1 Annual Sales by Various Information Service Sectors**

| Classification                       | 1990                         |           |                                           | 1991                         |           |                                           |
|--------------------------------------|------------------------------|-----------|-------------------------------------------|------------------------------|-----------|-------------------------------------------|
|                                      | Annual sales<br>(¥1 million) | Ratio (%) | Increase from<br>the previous<br>year (%) | Annual sales<br>(¥1 million) | Ratio (%) | Increase from<br>the previous<br>year (%) |
| Total                                | 5,872,678                    | 100.0     | 135.0                                     | 6,886,108                    | 100.0     | 117.3                                     |
| Data processing                      | 963,333                      | 16.4      | 129.3                                     | 1,079,221                    | 15.7      | 112.0                                     |
| Online information processing        | 648,791                      | 11.0      | 145.8                                     | 711,466                      | 10.3      | 109.7                                     |
| VAN                                  | 203,400                      | 3.5       | 144.0                                     | 217,903                      | 3.2       | 107.1                                     |
| Data processing                      | 445,391                      | 7.6       | 146.6                                     | 493,563                      | 7.2       | 110.8                                     |
| Offline information processing       | 314,542                      | 5.4       | 104.8                                     | 367,755                      | 5.3       | 116.9                                     |
| Software development and programming | 3,457,947                    | 58.9      | 137.6                                     | 4,149,420                    | 60.3      | 120.0                                     |
| Software development                 | 2,905,840                    | 49.5      | 134.6                                     | 3,452,047                    | 50.1      | 118.8                                     |
| Sales of software products           | 552,107                      | 9.4       | 156.3                                     | 697,373                      | 10.1      | 126.3                                     |
| Data entry                           | 204,358                      | 3.5       | 122.8                                     | 210,169                      | 3.1       | 102.8                                     |
| Machine time sales                   | 53,628                       | 0.9       | 137.4                                     | 65,007                       | 0.9       | 121.2                                     |
| Facility management services         | 275,830                      | 4.7       | 128.5                                     | 309,894                      | 4.5       | 112.3                                     |
| Database service                     | 188,618                      | 3.2       | 119.7                                     | 215,955                      | 3.1       | 114.5                                     |
| Online                               | 129,009                      | 2.2       | 118.1                                     | 149,440                      | 2.2       | 115.8                                     |
| Offline                              | 59,610                       | 1.0       | 123.2                                     | 66,515                       | 1.0       | 111.6                                     |
| Various types of research            | 260,935                      | 4.4       | 127.8                                     | 315,256                      | 4.6       | 120.8                                     |
| Market research                      | 132,937                      | 2.3       | 120.5                                     | 166,595                      | 2.4       | 125.3                                     |
| Other research                       | 127,998                      | 2.2       | 136.4                                     | 148,661                      | 2.2       | 116.1                                     |
| Miscellaneous services               | 468,029                      | 8.0       | 150.1                                     | 541,185                      | 7.9       | 115.6                                     |

Source: "Survey of Selected Service Industries," MITI, July, 1992

## 2. Trends of Database Sales

The Survey of Selected Service Industries, which are designated statistics of MITI, is used for the official statistics relating to sales of database services in Japan. These statistics have been compiled annually since 1973, and provide an understanding of continuous sales trends with respect to (1) the information service industry, (2) commodity rental industry, and (3) advertising industry. In addition, statistics are also selectively compiled regarding the credit card industry, engineering industry, movie theaters, golf courses and so on.



| (¥100 million) |       |       |     |       |       |       |       |     |     |     |
|----------------|-------|-------|-----|-------|-------|-------|-------|-----|-----|-----|
| 1973           | 74    | 75    | 76  | 77    | 78    | 79    | 80    | 81  | 82  | 83  |
| 76             | 130   | 144   | 121 | 238   | 271   | 316   | 441   | 607 | 523 | 787 |
| 84             | 85    | 86    | 87  | 88    | 89    | 90    | 91    |     |     |     |
| 967            | 1,008 | 1,143 | 432 | 1,063 | 1,576 | 1,886 | 2,160 |     |     |     |

Figure 2-1 Growth in Annual Sales of the Database Service Industry

Note: A portion of the job classifications were revised in 1987 resulting in "Information supply services" being renamed as "Database services". Consequently, the graph was prepared using estimates in cases when discontinuity was observed in statistical values. Original statistical values are represented with dots.

Source: Prepared from "Report of the Survey of Selected Service Industries", MITI

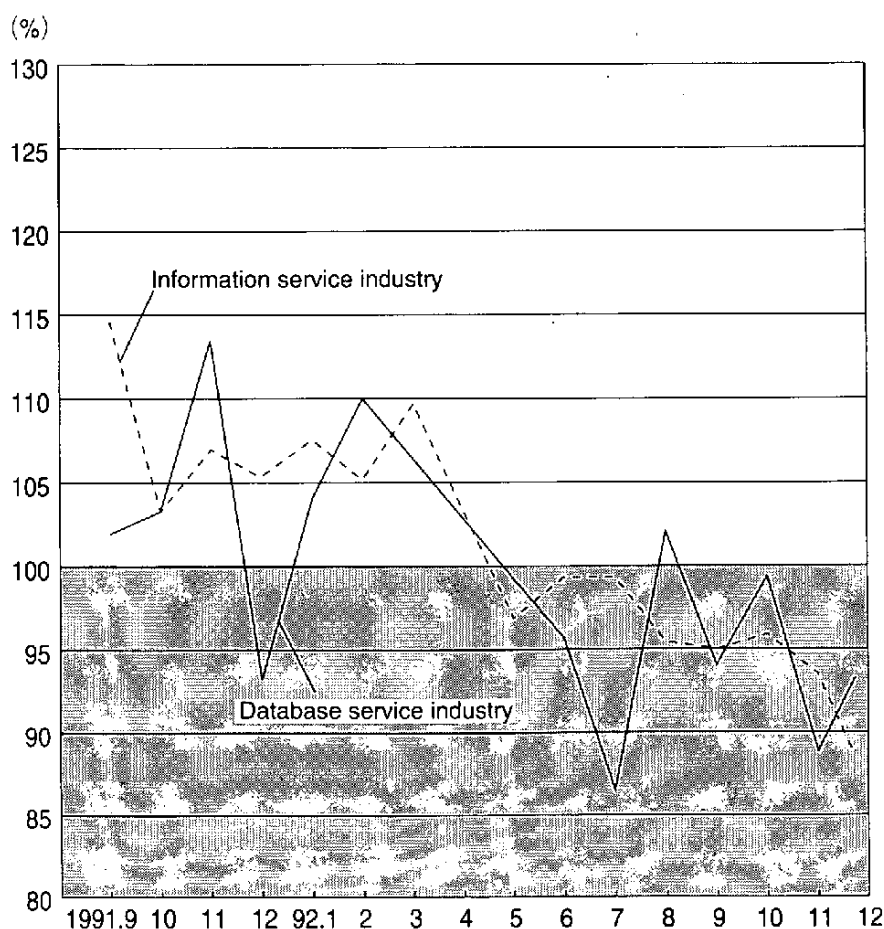
According to the report from the Survey of Selected Service Industries (July 1992), database sales in 1991 totaled ¥215,955 million, surpassing the ¥200 billion level for the first time in history. This figure corresponds to an increase of 14.5% over the previous year.

Examples of other products and services having a market size of roughly ¥200 billion include instant noodles, instant coffee, home telephones, total domestic sales of video software and radio broadcast advertising costs.

In addition, 69.2% of total sales came from online sales (Table 2-1).

Growth in database sales starting in 1973 is shown in Figure 2-1. Although sales grew at the rate of increasing three-fold in five years until the middle of the 1980's, that pace has slowed down in the following years.

Starting in 1992, database services also began to be negatively affected by the economic recession resulting from the collapse of the bubble economy. According to the "Monthly Report of Current Survey of Selected Service Industries" of MITI, providing up-to-date information on the Survey of Selected Service Industries on a monthly basis, database service sales during the first quarter of 1992 (January through March) demonstrated sluggish growth,



**Figure 2-2 Growth in Sales of the Database Service Industry in Comparison with Same Months of the Previous Year**

Source: Prepared from "Monthly Report of Current Survey of Selected Service Industries", MITI

only increasing at a single-digit of 6.9% in comparison with the same period of the previous year. Sales then decreased by 0.6% during the second quarter, by 5.9% during the third quarter, and by 6.6% during the fourth quarter, thus showing negative growth for the first time. Sales decreased by 1.9% in compared with the previous year for the 1992 calendar year. Looking at these figures on a monthly basis, after showing negative results for the first time in May, reduction of earnings in comparison with the same month of the previous year were recorded every month through December with the exception of August (Figure 2-2).

### **3. State of Database Distribution**

#### **3.1 Domestic Databases Increase by 33% to Exceed 2,600**

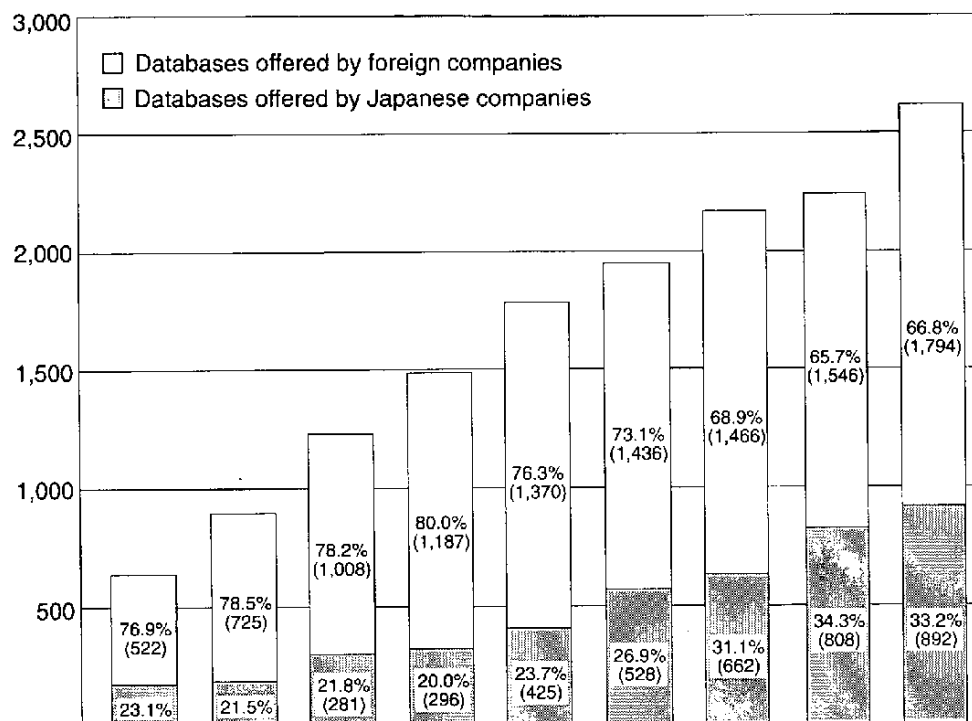
Information about databases available in Japan can be obtained from the "Database Directory" issued by MITI. This directory has been issued annually since its inception in 1982. It contains a wide range of subject matter pertaining to databases in Japan, including topics such as: (1) Summary of database service companies; (2) Names of producers; (3) Database characteristics; (4) Names of service systems; and, (5) Service forms. According to the 1991 edition of this directory, the number of databases totaled 2,686. This corresponds to a growth rate of 14.1% in comparison with the previous year. There are 892 domestic databases that account for 33.2% of the total (Figure 2-3).

#### **3.2 Business Databases Represent the Largest Category**

Looking at the number of databases being distributed in terms of the four major categories of the "Database Directory", general databases account for 26.8%, natural science and technology databases account for 29.6%, humanities databases account for 3.5%, and business databases account for 39.5%.

The trend of small number of databases in the category of humanities remains unchanged. In addition, natural science and technology databases comprise roughly 30% of the total, while those in the category of business comprise nearly 40%. The proportion of the number of databases in general categories continues to increase steadily each year.

Furthermore, although classified as a general category, information contained in "newspapers, journals and news" and "who's who/organizations" is used for business. Thus, incorporating this information into the business category, business databases account for more than half of the total. This trend has not changed since 1986 (Table 2-2).



| FY               | 1983 | 1984 | 1985  | 1986  | 1987  | 1988  | 1989  | 1990  | 1991  |
|------------------|------|------|-------|-------|-------|-------|-------|-------|-------|
| No. of databases | 679  | 924  | 1,289 | 1,483 | 1,795 | 1,964 | 2,128 | 2,354 | 2,686 |

**Figure 2-3 Databases Accessible in Japan**

Source: "Database Directory," MITI

**Table 2-2 Transition of Database Distribution Ratio by Category (Actual No. of Database)**

| Category                       | 1986  | 1987  | 1988  | 1989  | 1990  | 1991  |
|--------------------------------|-------|-------|-------|-------|-------|-------|
| General                        | 18.0  | 19.8  | 21.4  | 24.9  | 26.4  | 26.8  |
| Natural science and technology | 30.9  | 27.6  | 31.1  | 29.6  | 31.3  | 29.6  |
| Humanities                     | 4.0   | 3.6   | 3.9   | 3.8   | 3.8   | 3.5   |
| Business                       | 46.9  | 48.9  | 43.3  | 41.4  | 38.1  | 39.5  |
| Others                         | 0.2   | 0.1   | 0.3   | 0.3   | 0.4   | 0.6   |
| Total                          | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Total number of databases      | 1,483 | 1,795 | 1,964 | 2,128 | 2,354 | 2,686 |
| Business (modified value)      | 52.7  | 57.5  | 54.1  | 53.1  | 50.5  | 52.9  |

Source: "Database Directory," MITI

### **3.3 "Newspapers, Journals and News" Databases Top Sub-Categories**

Within general categories, there are 281 databases pertaining to "newspapers, journals and news", the largest number in this category. Moreover, the number of databases in this category has increased at the rate of roughly 50 per year over the past several years. What is more, during the past three years, this category accounts for the largest share as a single category.

In natural science and technology databases, databases pertaining to "medicine, pharmaceuticals, biotechnology and biology" represent the top category at 164. In addition, there is also a large number of "electricity, electronics and information" databases as well as "chemistry" databases.

The largest number of databases in the business category is relating to overseas "corporate finance and profiles" at 238. There is also a large number of databases in the categories of "finance, securities and foreign exchange" (156) as well as "markets and products" (130) (Table 2-3).

In any category, the reason for the large number of databases or the rapid growth is due to the high renewal frequency of that data as well as the availability of the fields such as advanced technologies.

### **3.4 Slight Increase in Online Services Even Among Domestic Databases**

The number of databases by supply form shows that online databases are overwhelming. In particular, the online ratio of overseas databases is in excess of 98% as almost all of them can be accessed by modem now. Furthermore, those databases that can be utilized both online and offline are counted into the number of online types.

There are more than 300 types of domestic databases provided on an offline basis by magnetic tapes or other medium. For these databases by category, although the online ratio of overseas databases in all regions surpasses 95%, this ratio does not reach the 80% level with the exception of those in the "other" category. However, the overall online ratio of domestic databases demonstrates an increasing tendency, increasing slightly from 71% to 73% and eventually 75% over the past three years.

**Table 2-3 Distribution by Category of Databases Accessible in Japan**  
(Actual Number of Databases)

(Continued on next page)

|                                | Sub-Category                                         | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 |
|--------------------------------|------------------------------------------------------|------|------|------|------|------|------|
| General                        | General (Encyclopedia and document guide)            | 34   | 45   | 47   | 62   | 66   | 70   |
|                                | Newspapers, journals and news                        | 49   | 112  | 153  | 192  | 231  | 287  |
|                                | Who's who/Organizations                              | 38   | 42   | 53   | 58   | 62   | 72   |
|                                | Government administration                            | 21   | 19   | 13   | 26   | 30   | 39   |
|                                | Laws                                                 | 28   | 25   | 25   | 65   | 67   | 56   |
|                                | Politics                                             | 21   | 19   | 19   | 22   | 32   | 40   |
|                                | Health and sports                                    | 6    | 7    | 11   | 10   | 9    | 14   |
|                                | Travel and scheduling                                | 7    | 14   | 5    | 6    | 8    | 7    |
|                                | Recreation and leisure facilities guide              | 10   | 15   | 18   | 19   | 31   | 37   |
|                                | Domestic culture and home life                       | 8    | 11   | 15   | 7    | 10   | 9    |
|                                | Dictionary and supplementary files                   | 20   | 23   | 23   | 23   | 25   | 31   |
|                                | Place names, maps and addresses                      | 6    | 4    | 11   | 10   | 13   | 12   |
|                                | Other                                                | 19   | 20   | 26   | 29   | 37   | 47   |
|                                | Sub-totals                                           | 267  | 356  | 419  | 529  | 621  | 721  |
| Natural Science and Technology | General science and technology                       | 42   | 42   | 67   | 60   | 73   | 74   |
|                                | Patents                                              | 50   | 55   | 64   | 65   | 75   | 79   |
|                                | Medicine, pharmaceuticals, biotechnology and biology | 87   | 104  | 123  | 129  | 140  | 164  |
|                                | Chemistry                                            | 56   | 58   | 91   | 94   | 97   | 111  |
|                                | Physics                                              | 4    | 4    | 4    | 3    | 6    | 6    |
|                                | Mathematics                                          | 4    | 4    | 2    | 3    | 4    | 4    |
|                                | Electricity, electronics and information             | 76   | 64   | 71   | 81   | 115  | 114  |
|                                | Machinery                                            | 9    | 11   | 12   | 11   | 14   | 16   |
|                                | Construction (civil engineering, architecture)       | 10   | 13   | 6    | 13   | 18   | 17   |
|                                | Space, earth and marine                              | 14   | 17   | 20   | 20   | 21   | 22   |
|                                | Atomic power                                         | 1    | 2    | 3    | 3    | 3    | 4    |
|                                | Environment and pollution                            | 25   | 28   | 46   | 45   | 50   | 46   |
|                                | Energy and resources                                 | 23   | 23   | 23   | 24   | 26   | 33   |
|                                | Agriculture                                          | 16   | 16   | 11   | 12   | 13   | 12   |
|                                | Meteorology                                          | 11   | 12   | 13   | 13   | 13   | 12   |
|                                | Metals and materials                                 | 11   | 11   | 17   | 20   | 32   | 39   |
|                                | Foods                                                | 6    | 7    | 7    | 8    | 9    | 9    |
|                                | Fibers, lumber and pulp                              | 4    | 4    | 5    | 5    | 5    | 5    |
|                                | Other                                                | 9    | 20   | 26   | 22   | 24   | 28   |
|                                | Sub-totals                                           | 458  | 495  | 611  | 631  | 738  | 795  |

Source: Prepared from the "Database Directory", MITI

**Table 2-3 Distribution by Category of Databases Accessible in Japan  
(Actual Number of Databases)**

| Sub-Category |                                           | 1986  | 1987  | 1988  | 1989  | 1990  | 1991  |
|--------------|-------------------------------------------|-------|-------|-------|-------|-------|-------|
| Humanities   | General humanities                        | 8     | 10    | 10    | 10    | 11    | 8     |
|              | Education                                 | 15    | 12    | 17    | 17    | 15    | 12    |
|              | Sociology                                 | 6     | 8     | 6     | 6     | 8     | 11    |
|              | Vital statistics                          | 8     | 9     | 17    | 20    | 26    | 28    |
|              | Law                                       | 1     | 2     | 1     | 1     | 1     | 2     |
|              | History and political science             | 2     | 2     | 2     | 2     | 2     | 2     |
|              | Arts (movies, music)                      | 5     | 7     | 7     | 7     | 5     | 9     |
|              | Psychology                                | 4     | 4     | 5     | 3     | 3     | 3     |
|              | Linguistics                               | 2     | 2     | 2     | 3     | 2     | 3     |
|              | Philosophy                                | 1     | 1     | 1     | 1     | 1     | 1     |
|              | Religion                                  | 7     | 6     | 7     | 9     | 9     | 8     |
|              | Other                                     | 1     | 1     | 2     | 2     | 6     | 6     |
|              | Sub-totals                                | 60    | 64    | 77    | 81    | 89    | 93    |
| Business     | General business industry                 | 51    | 72    | 67    | 62    | 77    | 95    |
|              | Marketing and products                    | 66    | 98    | 93    | 102   | 109   | 130   |
|              | Economy (overseas)                        | 111   | 127   | 111   | 108   | 71    | 86    |
|              | Economy (Japan)                           | 31    | 54    | 62    | 76    | 82    | 86    |
|              | Corporate finance and profiles (overseas) | 117   | 143   | 139   | 149   | 204   | 238   |
|              | Corporate finance and profiles (Japan)    | 49    | 66    | 61    | 66    | 72    | 78    |
|              | Accounting and management                 | 13    | 16    | 12    | 10    | 10    | 13    |
|              | Finance, securities and foreign exchange  | 117   | 137   | 138   | 140   | 134   | 156   |
|              | Energy industry                           | 34    | 53    | 37    | 38    | 8     | 8     |
|              | Communications and broadcasting           | 19    | 20    | 31    | 32    | 27    | 33    |
|              | Agriculture, forestry and fisheries       | 23    | 11    | 11    | 7     | 10    | 9     |
|              | Chemical industry                         | 7     | 8     | 9     | 9     | 9     | 10    |
|              | Labor                                     | 10    | 9     | 9     | 8     | 6     | 7     |
|              | Architecture and construction             | 6     | 7     | 4     | 5     | 5     | 6     |
|              | Transportation                            | 14    | 16    | 19    | 23    | 16    | 22    |
|              | Sales and services                        | 4     | 7     | 9     | 7     | 7     | 15    |
|              | Distribution and real estate              | 3     | 4     | 6     | 8     | 10    | 9     |
|              | Other                                     | 20    | 30    | 33    | 31    | 39    | 61    |
|              | Sub-totals                                | 695   | 878   | 851   | 881   | 896   | 1,062 |
| Other        |                                           | 3     | 2     | 6     | 6     | 10    | 15    |
| Grand Totals |                                           | 1,483 | 1,795 | 1,964 | 2,128 | 2,354 | 2,686 |

Source: Prepared from the "Database Directory", MITI

---

#### **4. Comparison of Database Conditions in the U.S. and Japan**

Since database definition and scope are not unique around the world, it is difficult to make a strict comparison of their respective states. However, comparison with databases in the U.S., which is the advanced database nation, provides a good model for gaining an understanding of the positioning of databases in Japan.

Based on the points mentioned above, a comparison was made of the conditions surrounding databases in the U.S. and Japan using several types of data. Since the data used is not based on the same standards, this comparison was prepared to mainly provide a graphical comparison of differences between the two countries. Furthermore, indicators used for comparison consist of those that represent the strength of the database industry and those that indicate database attributes (Figure 2-4).

The following four indicators are used for the U.S. (1) Number of participating organizations (2) Number of producers (3) Number of passwords (4) Database sales

In addition, the following four indicators are used for Japan. (1) Number of distributed databases (2) Number of domestic databases (3) Number of business databases (4) Number of factual databases

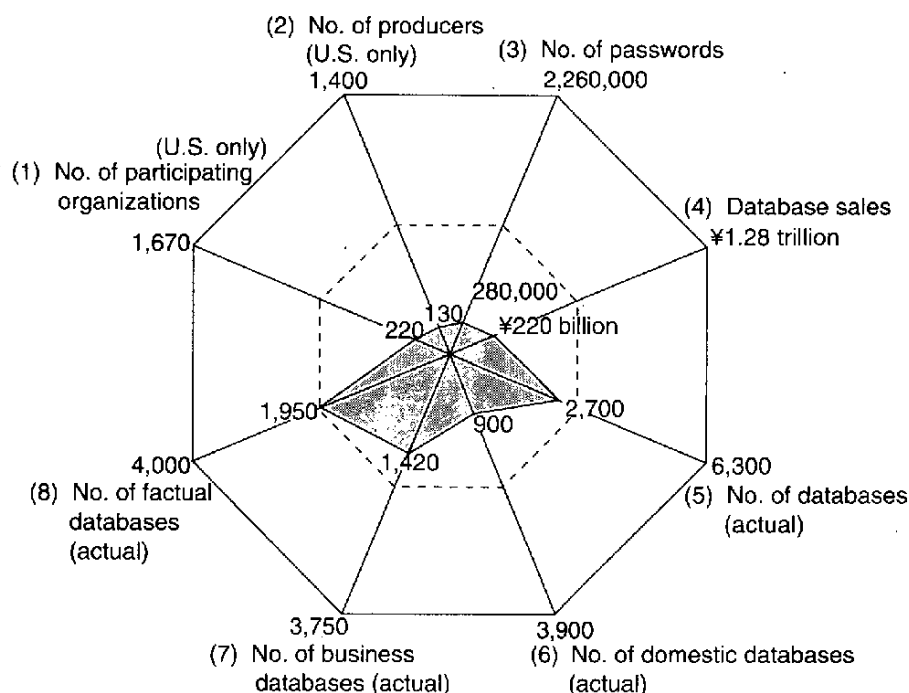
##### **4.1 Comparison of Database Industry Strength**

Taking the strength of the database industry, there is a considerable gap between the U.S. and Japan. With respect to the number of participating organizations, there are only 220 in Japan in comparison with 1,670 in the U.S. In other words, there are more than seven times participating organizations in the U.S. than in Japan. In addition, looking at the number of producers which is considered to be the major barometer for indicating the basic strength of the database industry, there are more than 10 times producers in the U.S. than in Japan. The gap is also seen in the case of the number of passwords, with that in the U.S. being 8 times greater, as well as the amount of total database sales, with that in the U.S. being nearly 6 times larger.

There are certain limitations on attempting to simply compare individual data in its original form. This is because, even though databases are referred to in the same manner in the U.S. and Japan, there are differences in geographical areas and population size, along with the differences of the history of databases in these two countries. For example, one way of overcoming these limitations would be to make a comparison after reducing the strength of the U.S. database industry by half using population size and so on as a coefficient. However, even if this is done, there is still a large gap in the industry strength indicators between the U.S. and Japan.

Data used for the number of participating organizations in the U.S. is based on approximate figures that are totaled and analyzed based on "Computer-Readable Databases 1992" published

Outer graph: U.S.  
Inner graph: Japan



**Figure 2-4 Graphical Comparison of Databases in the U.S. and Japan (1991)**

Note 1: (1), (2), (5) and (6) for the U.S. were totaled and analyzed based on "Computer-Readable Databases 1992" (Gale Research Inc., 1991) (figures are only approximate). Includes both online and batch databases.

Note 2: (3) for the U.S. refers to the number of passwords excluding those of PC network services, Videotex and CRS systems according to "Nikkei New Media (Sept. 14, 1992)" (total number of passwords including these is 5,283,201). However, this figures includes the passwords of both U.S. users and overseas users. (3) for Japan does not include the passwords of PC network service, Videotex and CRS systems according to "Nikkei New Media (July 27, 1992)".

Note 3: Sales of (4) for the U.S. indicate rough figures calculated at the rate of ¥125/US\$ for estimates prepared by Link Resources Corporation. Sales of (4) for Japan according to the "Survey of Selected Service Industries", MITI, 1991

Note 4: (7) and (8) for the U.S. were estimated from "Directory of Online Databases 1992 January" (Cuadra/Gale) and "Computer-Readable Databases 1992" (Gale Research Inc., 1991). Includes both online and batch databases. (7) and (8) for Japan according to the "Database Directory" (1991), and include both online and batch databases. In addition, the revised value that includes "news" and so forth is used for the business figure.

Note 5: The broken line shown between the two graphs represents values equal to 50% of the values of the U.S., and is shown to serve as a reference since the population of Japan is roughly half that of the U.S.

by Gale Research Inc.

Data relating to the number of passwords is based on "Nikkei New Media" (Sept. 14, 1992). This publication is linked with the IDP report publication of the U.S. that periodically provides introductions to password rankings of information services in the U.S. The figures used in the graph do not include passwords of consumer services such as Videotex as well as CRS systems. Database sales are obtained from the data of Link Resources Corporation.

With respect to data for Japan, data concerning the number of participating organizations and number of producers is based on the "Database Directory". Figures for the number of passwords are based on the results of the independent survey contained in "Nikkei New Media" (July 27, 1992 issue), considered to be the established reference in this field, while figures for database sales are obtained from the "Survey of Selected Service Industries" (MITI).

## 4.2 Comparison of the Database Attributes

The difference between the U.S. and Japan is not that large in the case of comparison of database attributes. This is true since almost all databases in the U.S. can be accessed from Japan on an online basis.

For example, the number of databases that can be utilized in the U.S. is 2.3 times greater than that in Japan, the number of business databases is 2.6 times greater, and the number of factual databases is 2.1 times greater. Incidentally, when the population ratio is taken into consideration and figures for the U.S. are reduced by half, there are hardly any differences between the U.S. and Japan for each of these figures.

However, in the case of the number of domestic databases, which is also an indicator of attributes, the U.S. has a considerable lead, being 4.3 times the number in Japan. Although the number of domestic databases has steadily increased over the past few years in Japan, due to the differences lying for long time, they are not likely to be overcome in short time.

The sources of data for comparison of attributes are basically the same as those on which the comparison of industry strength was based. The footnotes in Figure 2-4 should be referred to with respect to those respective sources, tabulation procedures and so on.

**Table 2-4 Comparison between Japanese and U.S. Databases (1991)**

| Criteria                           | Japan | U.S. |
|------------------------------------|-------|------|
| No. of participating organizations | 1.0   | 7.6  |
| No. of producers                   | 1.0   | 10.8 |
| No. of passwords                   | 1.0   | 8.1  |
| Total database sales               | 1.0   | 5.8  |
| No. of distributed databases       | 1.0   | 2.3  |
| No. of domestic databases          | 1.0   | 4.3  |
| No. of business databases          | 1.0   | 2.6  |
| No. of factual databases           | 1.0   | 2.1  |

Note: Sources and calculation methods are the same as indicated in Figure 2-4.

### III Trends of the Database Service Industry

#### 1. Present State of Database Services

DPC conducts its annual "Survey of the Database Service Industry" in order to gain an understanding of the trends of the database service industry. This survey is an original survey for "Databases in Japan".

The latest survey was conducted in September 1992 in which questionnaires were sent to those companies registered in the "Database Directory" (222 companies). The number of companies which responded validly was 142 (response rate: 64%). The following provides an introduction to the present state of the database service industry in Japan based on the analytical results of this survey.

According to the 1991 edition of the "Database Directory", among the 222 registered companies, there are 23 producers, 16 vendors, 48 information brokers and 10 agents. In addition, the most common form of business is that of the companies functioning as both producers and vendors at 68 (Table 3-1).

**Table 3-1 Comparison of the Business Types of Database Service Industry**

| Business types                        | Companies registered in the "Database Directory" |       |
|---------------------------------------|--------------------------------------------------|-------|
|                                       | No. of companies                                 | Ratio |
| Producers                             | 23                                               | 10.4  |
| Vendors                               | 16                                               | 7.2   |
| Information brokers                   | 48                                               | 21.6  |
| Agencies                              | 10                                               | 4.5   |
| Producers/vendors                     | 68                                               | 30.6  |
| Producers/vendors/agencies            | 8                                                | 3.6   |
| Producers/vendors/information brokers | 9                                                | 4.1   |
| Producers/information Brokers         | 6                                                | 2.7   |
| Others                                | 34                                               | 15.3  |
| Total                                 | 222                                              | 100.0 |

Source: "Database Directory," MITI, November 1992

---

## **1.1 Attributes of the Replying Companies**

### **(1) Industrial Categories**

What are the industrial categories of those companies in database services? The most common category among the 142 replying companies is "data processing and information service", containing 72 companies (50.7%). There are also 24 companies (16.9%) classified as "other business-to-business services", including "think tank, broadcast and communications", followed by 16 companies (11.3%) classified as "other manufacturers", such as those engaged in "printing, publishing and newspapers".

### **(2) Services**

As expected, the most common service form among the 142 replying companies is "producers/vendors" at 39 companies (27.5%). This is followed by information brokers at 25 companies (17.6%) and producers at 22 companies (15.5%).

There are 66 companies that are dedicated to one type of database service, accounting for 46.5% of the total. In addition, when companies are counted while including those companies engaged in both dedicated services and multiple services, there are 85 producers and 72 vendors.

### **(3) Other (Capital, Annual Sales, Number of Employees)**

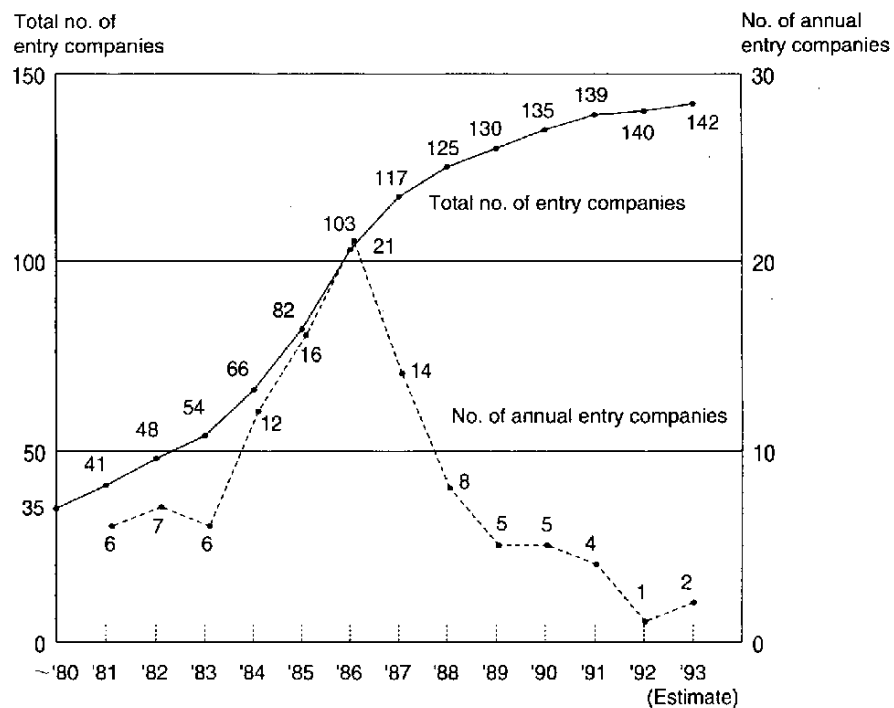
With respect to distribution of capital, there are 44 companies (31%) retaining capital of ¥50 million to ¥500 million, and 40 companies (28.2%) retaining capital of less than ¥50 million. Both of these groups account for roughly 60% of the total.

With respect to the annual sales of replying companies, the largest group consists of 29 companies (20.4%) having annual sales of ¥1-5 billion. However, since 16% of the replying companies have annual sales of ¥10-50 billion, 15% have annual sales of ¥0.1-0.5 billion and 9% have annual sales of ¥0.5-1 billion, it appears that the scale of annual sales tends to be somewhat scattered. Furthermore, with respect to business type, the annual sales of vendors and agents was the largest. (Note: Annual sales refer here to the gross annual sales of the replying companies, and not exclusively to database sales.)

Looking at the distribution of the number of employees at replying companies, although the number of companies having 1,000-5,000 employees is the largest at 22 (15.5%), the number of companies having 5-20, 20-50 and 50-100 employees each accounts for 14.8% of the total, thus indicating a considerable degree of variation.

## **1.2 Entering into the Database Industry**

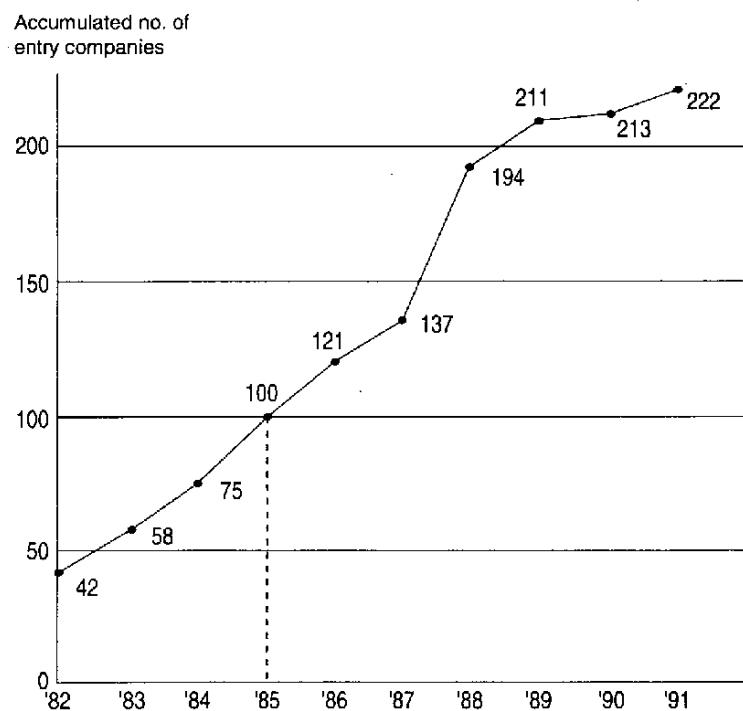
35 of the 142 replying companies (25%) entered the database service industry in 1980 or



**Figure 3-1 Annual No. of Entries Into the Database Industry**

Note 1: No. of companies entering in 1992 is calculated as of September 1992.

Note 2: In case one company has entered several business types, the earlier entry is recorded here.



**Figure 3-2 Transition of Companies Registered in the "Database Directory"**

Source: "Database Directory," MITI

earlier. This means that the majority of companies entered the industry in the 1980's. In addition, entering was particularly active during the period from 1984 to 1987. Incidentally, 63 companies entered the industry during that period, currently accounting for 44.4% of the total number of companies in the industry (Figure 3-1).

For reference purposes, growth in the number of companies registered in the "Database Directory" are shown in Figure 3-2.

### 1.3 Positioning of the Database Service Industry

As can be seen in the attributes of the replying companies, those companies currently in the database service industry entered the industry from a diverse range of industrial categories. In other words, for many of those companies, the providing of database services is performed as only one of their businesses.

In such cases, it is not possible to determine whether database services are their major business or not. In this survey, there are no clear definitions for what is meant by major business, such as accounting for more than 50% of total sales. Thus, although the positioning of "major business" is thought to contain some degree of future expectations on the part of the replying companies, it is also an extremely interesting indicator in terms of looking at the manner in which replying companies perceive their database business.

The tendency to position database services as the major business of a company has steadily grown stronger over the past three years. Incidentally, the number of companies presently positioning database services as their major business has increased from 32% in 1989 to 34% in 1990 and to 41% in 1991. In addition, when those companies that intend to make database services their major business in the future are included, the figures increased to 55%, 49% and 57% for the same time periods. In any case, these figures indicate the extent of expectations being placed on the database service industry.

However, according to the results of the latest survey, the percentage of companies regarding database services to presently be their major business decreased to 39%, while those companies that intend to make database services their major business in the future fell back to 49% (Figure 3-3). Considering the fact that the survey was conducted in September 1992,

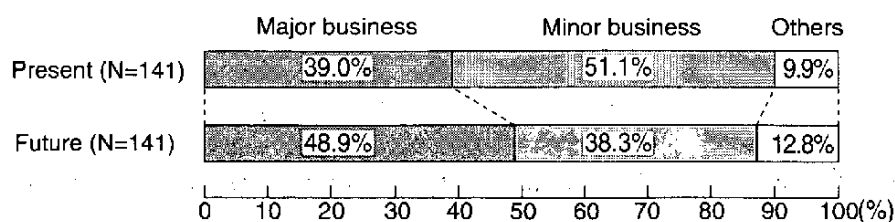


Figure 3-3 Positioning of Databases Services

these results are believed to reflect a sense of apprehension accompanying the current economic recession.

Looking at these results by business type, in the case of "producers/vendors", which had previously demonstrated the strongest tendency to make database services their major business, the number of companies that presently regard database services as their major business decreased by 10 points, while those that intend to make database services their major business in the future decreased by more than 30 points. In the case of other industrial categories as well, the number of companies positioning database services as their major business has decreased across the board.

#### **1.4 The Sales of Database Service**

As previously mentioned, in many cases companies are engaged in database services as only a part of their business activities. So, there are some difficulties in attempting to accurately figure out database sales at the level of individual companies. We have attempted here to portray the positioning of databases as a business from several different viewpoints indicated below relating to sales.

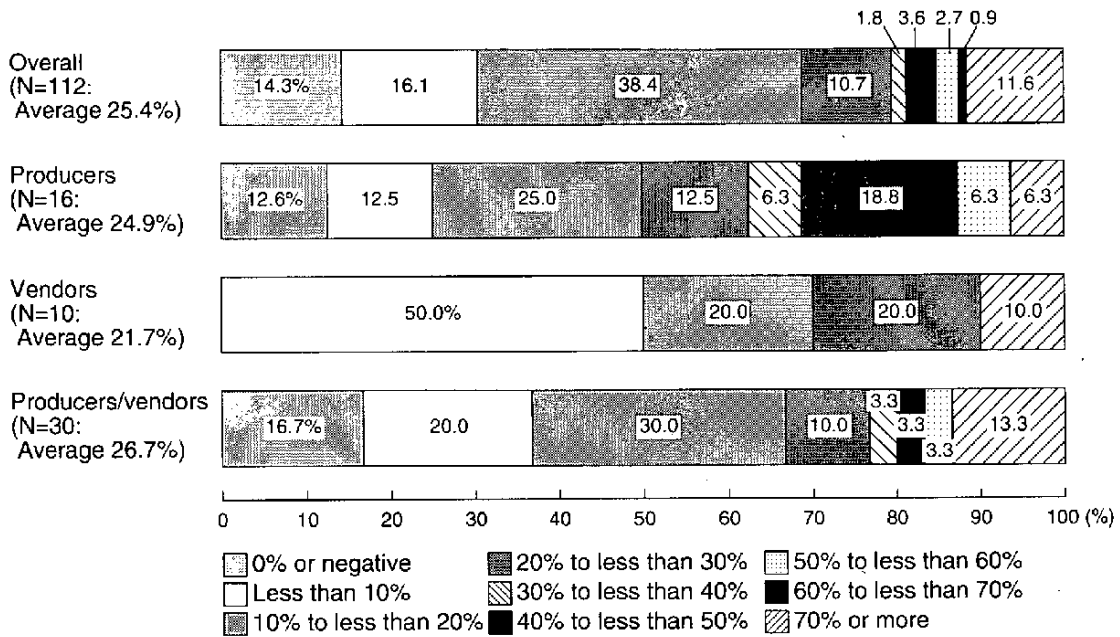
- (1) Ratio of database sales to company gross sales
- (2) Growth rate of database sales over the past three years;
- (3) Estimate for growth rate of database sales over the next five years;
- (4) Ratio of Japanese domestic database sales to total database sales; and,
- (5) Ratios of sales by forms of database services.

##### **(1) Ratio of Database Sales to Company Gross Sales**

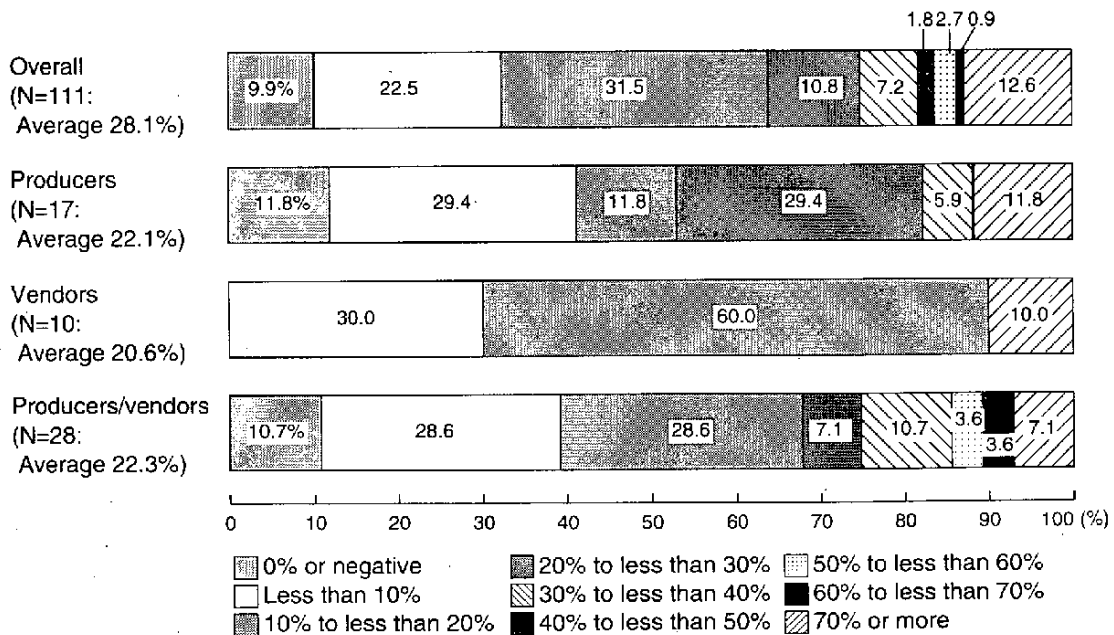
Looking at 97 companies from which replies were sent, the overall average ratio of database sales to company gross sales is 22.9%. However, due to considerable differences in database sales depending on the time of entering the industry as well as industrial category, the overall average is not considered to accurately depict the actual state.

Therefore, when looking at the overall distribution of replying companies according to the range of the sales ratio to gross sales, the most common range is 1-5% at 20.6%. This is followed by a range of 15-50% at 19.6% of the replying companies, and less than 1% at 17.5%. 10.3% of the replying companies indicates a range of the sales ratio of more than 90%. In other words, a considerable degree of variation can be seen in the range of sales. However, the total number of companies at which database sales account for less than 10% of gross sales continues to remain large, accounting for more than half at 51.5%.

Looking at this by business types, "producers" demonstrates the highest average value for ratio of database sales at 32.6%. In addition, the average for "producers/vendors" is 24.8%,



**Figure 3-4** Distribution of Annual Average Growth Rate of Database Sales (Average of Past 3 Years)



**Figure 3-5** Distribution of Expected Annual Average Growth Rate of Database Sales Over Next 5 Years (Forecast)

while the average for "vendors" is 23.3%.

## **(2) Growth Rate of Recent Database Sales**

Looking at the annual average growth rate of database sales over the past three years at 112 replying companies, the overall average is 25.4%. The most common growth range is 10-20%, with these companies accounting for 38.4% of the total. However, there are also 3 companies (2.7%) that indicates negative growth rate. In addition, there are also 13 companies (11.6%) that indicated growth of plus/minus 0%.

Looking at these results by business type, there are no major differences in the results for producers, vendors and producers/vendors (Figure 3-4).

## **(3) Expected Annual Growth Rate of Sales Over Next 5 Years**

The overall average value of the 111 replying companies is 28.1%. Although this slightly exceeds the annual average growth rate for the past three years (25.4%), the distribution of growth rate demonstrates a pattern that is nearly the same as past results. Incidentally, the most common growth rate is 10-20% indicated by 31.5% of the replying companies. This is followed by less than 10% indicated by 22.5%, and 70% or more indicated by 12.6%. Furthermore, there is negative growth reported by 1 company and 10 companies that indicated the sales would remain essentially unchanged.

Looking at these results by business type, there are no significant changes observed in the pattern obtained in the case of past results (Figure 3-5).

## **(4) Ratio of Japanese Database Sales**

The comparison attempts to determine the extent to which Japanese database sales account for total database sales. The ratio of Japanese database sales for 125 replying companies is 85.9%, indicating a level nearly the same as that of the previous survey.

As stated in the section of the distribution status of databases, although overseas databases account for a large proportion of databases being supplied at 67%, in terms of sales, those of Japanese databases are overwhelmingly large. In other words, although a larger number of overseas databases are being supplied, Japanese databases are primarily being used.

## **(5) Database Sales by Service Form**

Looking at database sales by online and offline services, sales from online databases are larger for both Japanese and overseas databases.

The ratio of Japanese database sales resulting from online databases is 63%, this ratio has increased by 3.1 points over the results of the previous survey. The ratio of database sales resulting from online databases overseas is 88.1%, representing an increase of 8.2 points over the sales of the previous survey.

With respect to offline sales of Japanese databases, MT accounts for 12%, CD-ROM for 5% and other media for 20%. Each is slightly below the previous survey.

With respect to foreign databases, MT accounts for 4%, CD-ROM for 4.3% and other media for 3.5%. However, only offline sales with CD-ROM use demonstrates an increase from the previous survey, rising by 1.1 points.

## 1.5 Database Supply Methods

This section looks at the manner in which producers supply the databases that they have created. 83% of the 81 replying companies supply their databases on their own. In Japan, this figure supports the fact that database distribution mechanisms become increasingly undifferentiated. In other words, there are a large number of companies involved in multiple businesses as is the case with producers/vendors.

On the other hand, 16% of the replying companies are producers requesting the supply of databases for another company, while 22% are requesting database services to other two or more companies.

## 1.6 Problems with Database Production

Among problems faced by the producers in construction of databases, cost related problems

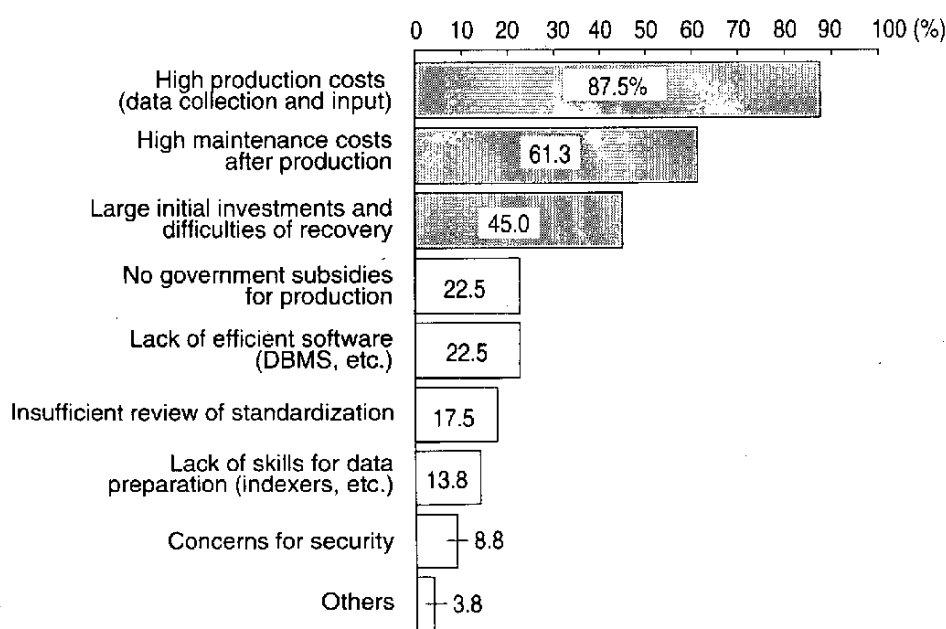


Figure 3-6 Problems Factors Involved with Database Production (N=80; multiple replies)

continue to rank high in the list. Incidentally, the top four problems in terms of the largest reply rates consisted of (1) time and cost required for gathering and entering of data; (2) heavy burden of maintenance costs; (3) difficulties in depreciating the initial investment; and, (4) absence of government assistance. As stated the above, cost is a common factor among these problems (Figure 3-6).

## 1.7 The Situation of Overseas Supply

### (1) Present State and Future Prospects of Overseas Supply

The number of producers and vendors supplying databases overseas tends to increase steadily each year. The ratio of companies that replied they supply databases overseas has risen from 17% to 21%, 23% and 27% over the past four years.

With respect to business types, producers/vendors demonstrates the largest proportion at 46%. However, in contrast, the producers supplying databases overseas increases by 16.8 points from the previous survey to 38.5%, the producers/vendors decreases by 6 points, while that of vendors decreases by 10.7 points (Figure 3-7).

The same pattern can be observed with respect to the future prospects of overseas database supply. In other words, the proportion of companies that answered they have plans to begin overseas supply is 31%, corresponding to an increase of 2 points from the previous survey. In addition, with respect to business type as well, although there are no changes in producers/vendors being ranked at the top, in contrast to the proportion of producers increasing by 3.5 points, the proportion of producers/vendors decreases by 10.7 points, while that of vendors decreases by 7.2 points (Figure 3-8).

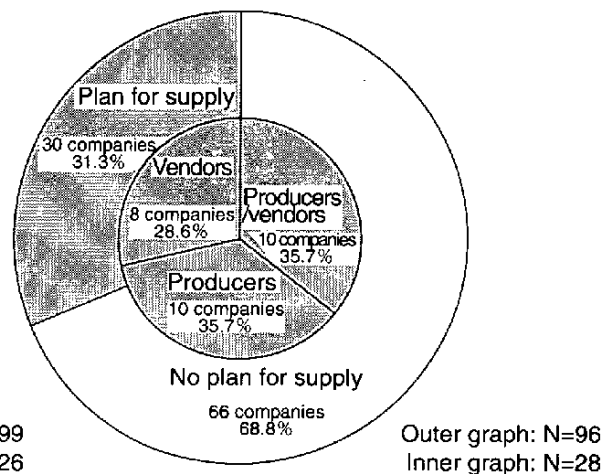
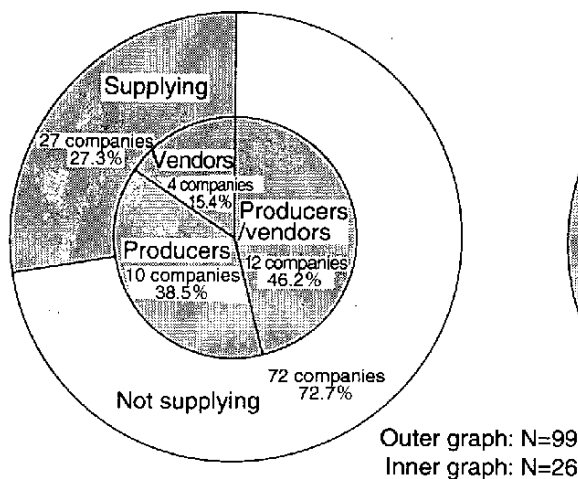


Figure 3-7 Present State of Overseas Supply

Figure 3-8 Future Prospects of Overseas Supply

## (2) Trends in the Number of Databases Supplied Overseas

These trends are also supported by a survey of the "Present State of Overseas Supply of Databases in Japan" conducted by the Japan Database Industry Association (DINA), acceding to the request from the Database Promotion Center, Japan (DPC), targeted at 200 organizations (of which 136 replied) in the domestic database service industry in July 1993. According to the survey, the actual number of Japanese databases being supplied overseas is 306. This corresponds to an increase of 5.5% from the 290 in the previous survey.

The number of Japanese databases according to the "Database Directory" (issued in October 1992) of MITI is 892. Although the times at which these two surveys were conducted differ slightly, it is possible to gain an understanding of the general trend in comparison of the two. When the proportion of databases in 1992 is calculated, it is found that roughly 1/3, or 32.5%, of Japanese databases can be used overseas.

Looking at the figures from six years ago, there were only 28 databases being supplied overseas, corresponding to the ratio of 9.5% of the total number of Japanese databases. As seen in Figure 3-9, both the number and the proportion of these databases have increased at a constant rate. Looking at these 306 databases by language, 205 (67.0%) are in Japanese, 54 (17.7%) are in English, 46 (15.0%) are in both Japanese and English, and 1 (0.3%) are other languages. In addition, with respect to supply form, 232 (75.8%) are supplied on an online basis, 28 (9.2%) are supplied both online and on MT, 22 (7.2%) are supplied on MT, 13 (4.2%) are supplied online, on MT and on CD-ROM/CD-I, 5 (1.7%) are supplied with CD-ROM/CD-I, and 6 (2.0%) are supplied online and on CD-ROM/CD-I (refer to the appendix for individual information concerning databases supplied overseas).

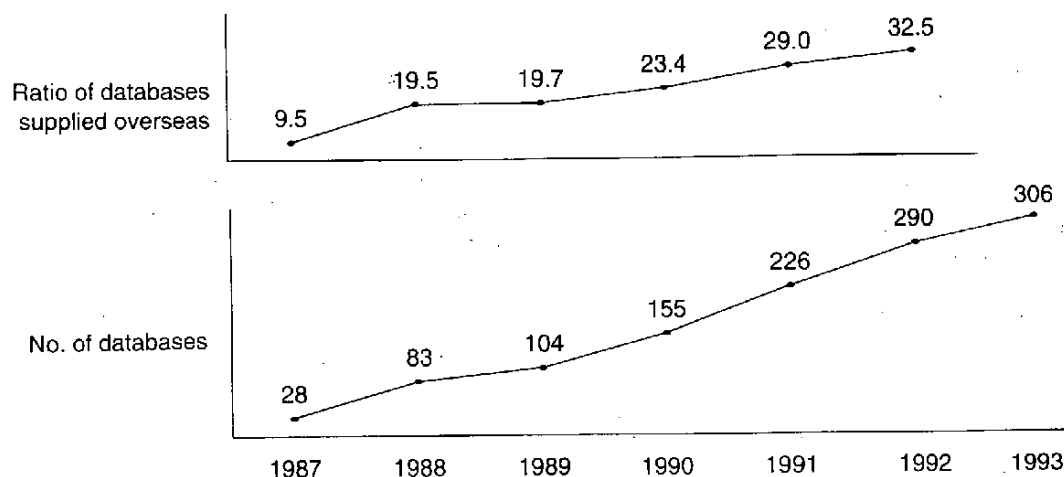


Figure 3-9 Growth in Databases Supplied Overseas

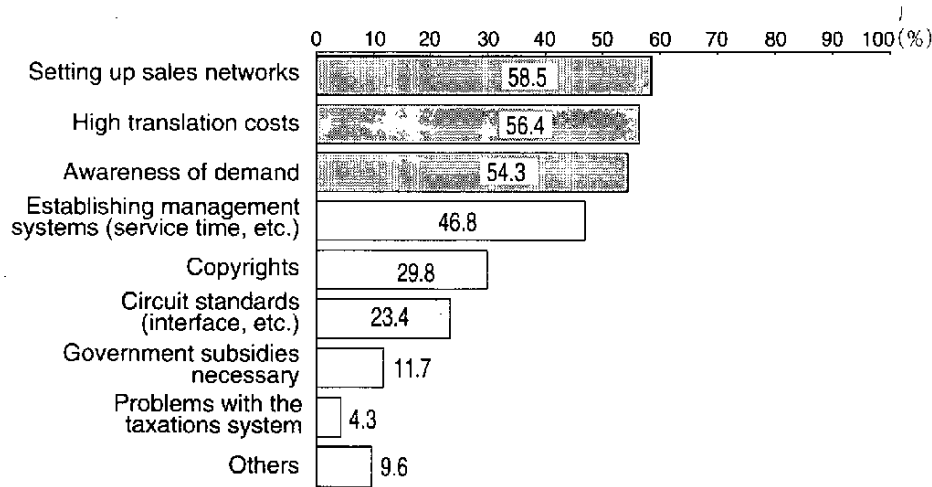


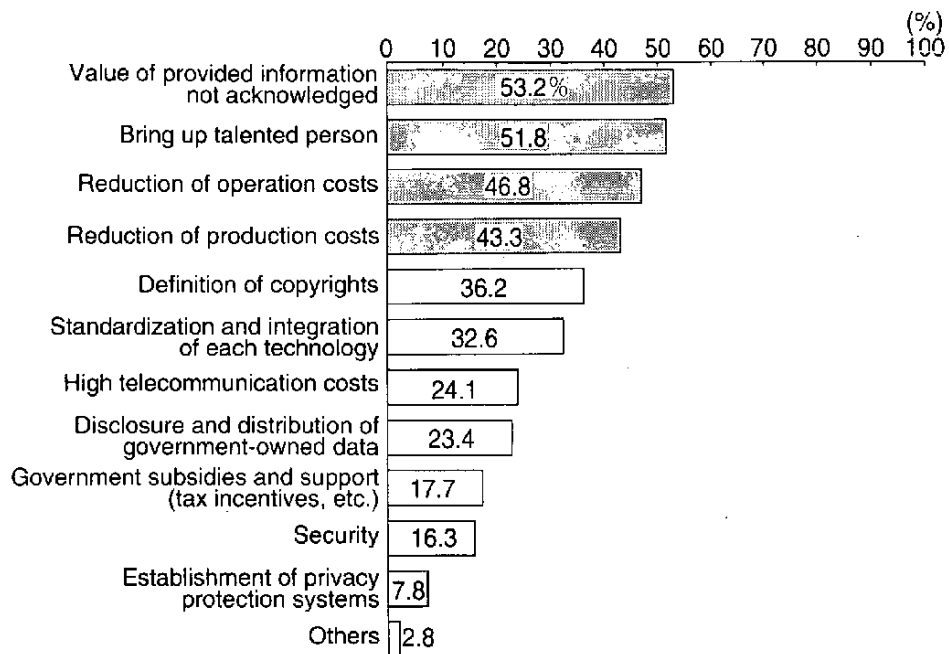
Figure 3-10 Problems of Overseas Database Supply (N= 94, Multiple Replies)

### (3) Problems Related to Overseas Supply

The top three problems related to the overseas database supply consisted of (1) setting up sales networks, (2) high translation costs, and (3) awareness of demand. These problems have not changed over the past several years. However, the problem of a "sales network" was ranked at the top for the first time in this survey, being contained in the replies of 94 companies (58.5%). In particular, 60% of the replying producers considers the sales network to be a significant problem related to the overseas database supply (Figure 3-10).

## 1.8 Future Problems

Two biggest problems over the past three years with respect to operating a company in database services are "value of provided information not acknowledged" and "bring up talented person". In addition, the third and the fourth are cost related problems, consisting of "reduction of operation costs" and "reduction of production costs". The fifth is "definition of copyrights", and this has occupied the same position over the past several years (Figure 3-11).



**Figure 3-11 Future Problems Involved with Database Services (N= 141, Multiple Replies)**

## **IV Present State of Use of Commercial Databases**

### **1. Outline of Survey and Methodology**

The Database Promotion Center, Japan (DPC) annually conducts its "Survey of User Awareness of Database Services". In this survey it is attempted to determine the status of commercial database utilization in Japan as well as problems encountered by users. This latest survey was conducted from September to October 1992 in the form of a questionnaire survey. Survey forms were sent to 2,809 domestic companies, educational institutions, public organizations and so forth, of which 722 returned replies (response rate: 25.7%).

The overall average of replying companies that presently use database services is 64.3%. Looking at this figure in terms of company size, 54.6% of small and medium-size businesses presently use database services, while the number increases to 68.2% in the case of large companies. Looking at these figures by industrial category, "oil/chemistry" leads the way at 88.5%, followed by "electric/general/transport machinery manufacturing" at 80.3% and "business-to-business services" at 74.4%. Thus, more than 70% of the replying companies are database users.

### **2. Actual Result and Scheduled Database Usage**

#### **2.1 Annual Usage Costs for Database**

Table 4-1 shows the average annual monetary amount of database usage per company by company size for 1991, along with the scheduled amounts for 1992. To begin with, the ratio of the monetary amount of Japanese database usage to that of foreign database usage in 1991 is roughly 82:18, indicating that the monetary amount of Japanese database usage is overwhelmingly large. In addition, this gap is larger than that in the previous survey. On the other hand, the actual number of commercial databases that can be used in Japan in the 1991 edition of the "Database Directory" consists of 1,794 foreign databases and 892 Japanese databases. Thus, the monetary amount of usage and actual number are opposite.

Next, the average monetary amount of database usage is ¥4.474 million per company for small and medium-size businesses, and ¥43.882 million for large companies. Although this indicates a 9.8-fold gap between the two groups, this value is smaller than that of the previous survey. Possible background factors for this include the considerable effects of the current economic recession. Growth rates in comparison with the 1990 figures for average monetary amount of database usage as determined in the previous survey consisted of an increase of 35.0% for small and medium-size businesses (from ¥3.313 million to ¥4.474 million), and a

**Table 4-1 Annual Average Usage Costs for Database by Company Size**

(Unit: ¥10,000)

| Company size                  | Actual result of 1991 (N=385) |                   |         | Scheduled for 1992 (N=387) |                   |                    |
|-------------------------------|-------------------------------|-------------------|---------|----------------------------|-------------------|--------------------|
|                               | Japanese databases            | Foreign databases | Total   | Japanese databases         | Foreign databases | Total              |
| Small/medium                  | 350.5<br>(78.3)               | 96.9<br>(21.7)    | 447.4   | 374.3<br>(6.8)             | 108.1<br>(11.6)   | 482.5<br>(7.8)     |
| Large                         | 3,581.5<br>(81.6)             | 806.7<br>(18.4)   | 4,388.2 | 3,487.5<br>(- 2.6)         | 816.4<br>(1.2)    | 4,304.0<br>(- 1.9) |
| Public service                | 105.7<br>(78.4)               | 29.1<br>(21.6)    | 134.8   | 121.9<br>(15.3)            | 32.1<br>(10.3)    | 154.0<br>(14.2)    |
| Average of Secondary Industry | 1,314.1<br>(80.0)             | 328.6<br>(20.0)   | 1,642.7 | 1,291.1<br>(- 1.8)         | 333.5<br>(1.5)    | 1,624.6<br>(- 1.1) |
| Average of Tertiary Industry  | 5,757.2<br>(82.1)             | 1,256.1<br>(17.9) | 7,013.3 | 5,588.7<br>(- 2.9)         | 1,271.0<br>(1.2)  | 6,859.7<br>(- 2.2) |
| Average                       | 2,495.7<br>(81.5)             | 565.6<br>(18.5)   | 3,061.3 | 2,462.4<br>(- 1.3)         | 580.0<br>(2.5)    | 3,042.4<br>(- 0.6) |

Note: The actual numbers shown in parentheses indicate the proportion of domestic database usage to foreign database usage, while the figures in parentheses for scheduled use indicate the growth rate in comparison with the previous year. The units for both are percent.

decrease of 2.3% for large companies (from ¥44.881 million to ¥43.882 million), indicating that cutbacks on database usage are larger in the large companies. This trend continued in the predicted growth rates in 1992 in the current survey, with large companies predicting a decrease of 2.6% in contrast to small and medium-size businesses predicting an increase of 7.8%.

Looking at the average monetary amounts of database usage by industrial category for 1991, the amount for "finance/insurance" runs far ahead of the others at ¥583.521 million. This was followed by "other manufacturers" at ¥35.768 million, "oil/chemistry" at ¥15.667 million and "commerce" at ¥16.279 million. With respect to the predictions for the growth rate in 1992, in addition to "iron and steel/nonferrous/metal manufacturers" predicting a 24.4% decrease in terms of the average monetary amount of database usage (¥9.239 million to ¥6.986 million), "other manufacturers" (down 9.5%) and "finance/insurance" (down 1.7%) also predicted decreases.

Looking at these results in terms of the ratio between Japanese and foreign databases, although Japanese databases are used more frequently than foreign databases on a monetary basis in all industrial categories, with respect to that ratio, users are tending to refrain from using Japanese databases. For example, the 1991 average amount of monetary usage per company in terms of the average of tertiary industry was ¥57.572 million for domestic databases and ¥12.561 million for foreign databases (ratio of 4.6 : 1). However, the amounts of the predictions for 1992 are ¥55.887 million for Japanese databases and ¥12.710 million for foreign databases (ratio of 4.4 : 1).

Figure 4-1 depicts the distribution of monetary amounts of database usage by company size for 1991. Among small and medium-size businesses, those companies reporting an annual

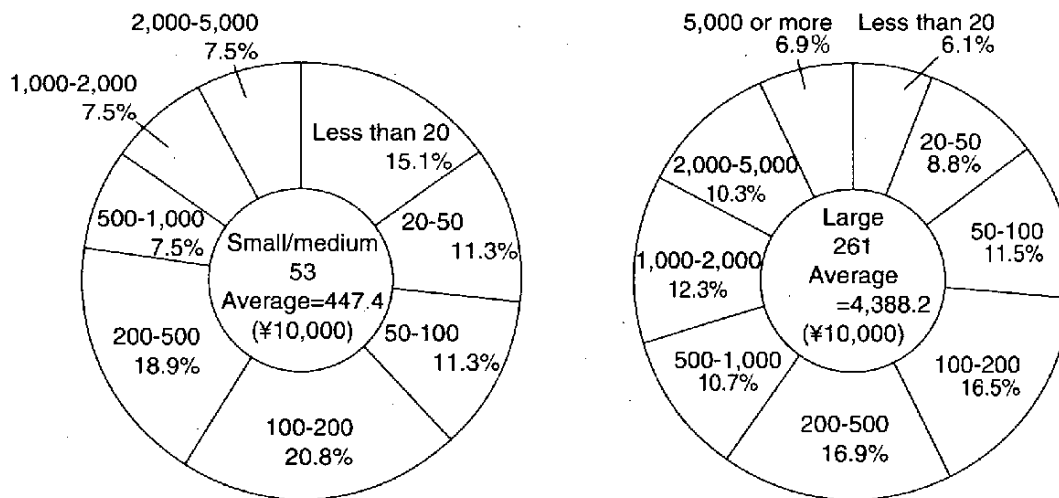


Figure 4-1 Annual Usage Costs of Actual Result of 1991 by Company Size (N=385)

monetary amount between ¥1 million and ¥2 million (roughly ¥80,000-160,000 on a monthly basis) were the most common, accounting for 20.8% of the total. Those that spent from ¥2 million to less than ¥5 million accounted for 18.9%. Thus, the number of small and medium-size businesses that spent less than ¥5 million on database usage accounted for 77.4% of the replying small and medium-size businesses. With respect to large companies, those reporting an annual monetary amount of from ¥1 million to less than ¥2 million accounted for 16.5% of the total. This was followed by those spending from ¥10 million to less than ¥20 million at 12.3%, indicating a relatively large dispersion. Although the average amount was ¥43,882 million, considering the fact that the cumulative total of this amount as well as higher ranges accounts for only 17.2%, there appears to be several large-volume database users that are raising the average.

### 3. The Types and Contents of Most-Used Commercial Databases

#### 3.1 Most-Used Database Vendors and Database Files

Table 4-2 shows the results of having each company list the top three database systems in terms of monetary amount of usage. The systems are arranged in order starting with the system most frequently listed by the replying companies. Overall, the top ranking systems listed by the largest number of companies are consisted of JOIS (207 replies, 45.8%), Nikkei Telecom (178 replies, 39.4%), PATOLIS (170 replies, 37.6%), DIALOG (158 replies, 35.0%) and STN (58 replies, 12.8%). These top five ranked systems have remained in same place over the past several years, while Japanese vendors account for the majority of the listings, including those ranked 6th and lower.

Looking at these figures by company size, JOIS, STN and G-Search are used more

**Table 4-2 Highly Utilized Vendors, According to Number of Replies (Aggregate of top three vendors of utilization from each replier)**

| Order in 1991 | 1992  |                | Name of systems        |
|---------------|-------|----------------|------------------------|
|               | Order | No. of replies |                        |
| 1             | 1     | 207            | JOIS                   |
| 2             | 2     | 178            | Nikkei Telecom         |
| 3             | 3     | 170            | PATOLIS                |
| 4             | 4     | 158            | DIALOG                 |
| 5             | 5     | 58             | STN                    |
| 6             | 6     | 48             | G-Search               |
| 10            | 7     | 23             | ELNET                  |
| 10            | 8     | 19             | TSR                    |
| 7             | 9     | 18             | NEEDS-IR               |
| 8             | 10    | 17             | COSMOS                 |
| 8             | 10    | 17             | NICHIGAI-ASSIST        |
| 13            | 10    | 17             | QUICK Video-1          |
|               | 10    | 17             | Reuter Monitor Service |
| 13            | 14    | 15             | BRANDY                 |
|               | 15    | 13             | Telerate               |

frequently among small and medium-size businesses than large companies. The top three systems in terms of utilization rate among small and medium-size businesses are JOIS (47.7%), DIALOG (40.0%) and PATOLIS (36.9%). Similarly, the top three systems among large corporations are PATOLIS (44.0%), JOIS (43.4%) and Nikkei Telecom (37.5%).

In addition, analysis by industrial category reveals that although Nikkei Telecom is used most frequently among members of tertiary industry, demonstrating a utilization rate of 45.5%, it only ranks 4th at 29.8% in the average of secondary industries. Conversely, although PATOLIS ranks 1st at 58.1% among secondary industries, it ranks 4th among tertiary industries at 22.7%.

Similar to the case of systems, Table 4-3 shows the results of having replying companies list the top three databases (files) in terms of highest utilization frequency per system for the top three systems in terms of monetary amount of usage. It can be seen that the top ranked databases in terms of utilization frequency are in line with the replies listing the most frequently used systems.

Every January and July Nikkei New Media (published by Nikkei Business Publications, Inc.) makes biannual interviews and surveys for major database service companies in Japan. Based on the surveys, it then publishes a list of rankings of the companies in terms of number of contracted users. According to those results, the vendor having the largest number of passwords of contracted users was the Nihon Keizai Shimbun, Inc. , providing database services such as Nikkei Telecom and NEEDS. This vendor has 71,613 passwords as of July 1, 1993. The next largest vendor is QUICK, which mainly provides stock market information, at 47,000 passwords. This is then followed by TKC, which supplies information concerning laws

**Table 4-3. Files with High Utilization Frequency (N=417, Multiple Replies)**

| Order in<br>1991 | 1992  |                | Databases                              |
|------------------|-------|----------------|----------------------------------------|
|                  | Order | No. of replies |                                        |
| 1                | 1     | 179            | JICST File on Science and Technology   |
| 3                | 2     | 167            | Japan patent utility model file        |
| 2                | 3     | 159            | Nikkei Newspaper article file          |
|                  | 4     | 97             | TSR-BIGS                               |
|                  | 5     | 94             | COSMOS2                                |
| 5                | 6     | 79             | Trademark file                         |
| 4                | 7     | 70             | WPI                                    |
| 8                | 8     | 58             | CA                                     |
| 7                | 9     | 53             | CA-SEARCH                              |
|                  | 10    | 51             | Nikkei Who's Who                       |
| 6                | 11    | 46             | MEDLINE                                |
|                  | 12    | 43             | INPADOC                                |
| 9                | 13    | 42             | Asahi Newspaper article database       |
| 11               | 14    | 41             | JICST File on Medical Science in Japan |
| 13               | 15    | 39             | CLAIMS                                 |

and ordinances and so forth, at 39,899 passwords.

Every company of top 8 companies, consisting of G-Search Corporation, NEC Corporation, Japan Information Center of Science and Technology, KINOKUNIYA COMPANY LTD. and MARUZEN CO., LTD. in addition to three mentioned above, has more than 10,000 passwords. The total number of passwords of the 26 companies surveyed was 309,492, corresponding to an increase of 3.4% from January 1, 1993 (Table 4-4).

### 3.2 Online Database Utilization Ratio

The forms of database utilization are the followings:

- (1) Online only
- (2) Both online and offline
- (3) Offline only

According to the survey, the utilization ratios for these three forms were 48.7%, 49.8% and 1.5%, respectively, similar to those of the previous survey. The utilization ratio of online database services is equal to the sum of (1) and (2), or 98.5%. This indicates that users become to choose from online and offline services according to their utilization frequency and so on.

**Table 4-4 Ranking of Vendors by No. of Contracted Users**

| Supplying Companies and Organizations                       | Names of Services                                                                                             | Description                                                                                                                                                                                                                                | No. of Passwords     |                      | Growth Rate (%) |
|-------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|-----------------|
|                                                             |                                                                                                               |                                                                                                                                                                                                                                            | As of July 1 1993    | As of Jan. 1 1993    |                 |
| Nihon Keizai Shimbun, Inc.                                  | Nikkei Telecom, NEEDS-IR, TS, BULK, NEXIS, DJNR, LEXPAT, LEXIS, FT PROFILE, etc.                              | Economic, corporate, financial, management finance, stock prices and bond prices information, newspaper and magazine article information, news article information from the U.S. and Europe, U.S. and European financial information, etc. | 71,813               | 70,327               | 1.8             |
| QUICK Corp.                                                 | QUICK-10, Video-1, FF, Indicator Board                                                                        | Comprehensive economic information focusing primarily on securities and finance.                                                                                                                                                           | <sup>1)</sup> 47,000 | <sup>1)</sup> 50,000 | -6.0            |
| TKC Corp.                                                   | LEX/DB, TPS1000, DYACOX, AUDIT1000, MIN/DB                                                                    | Full-text DB of judicial precedents, legal ordinances, etc. Includes management indicators, corporate legal affairs, management planning, tax payment planning, etc.                                                                       | 39,899               | 36,417               | 9.6             |
| G-Search Corporation                                        | G-Search                                                                                                      | Newspaper article information, corporate information, magazine and book information, industrial, economic and management information, who's who, etc.                                                                                      | 26,406               | 22,296               | 18.4            |
| NEC Corporation                                             | C&C-VAN Database Service, Semiconductor Technical Information Service                                         | Corporate information, newspaper article information, economic and trade information, marketing information, semiconductor technology, etc.                                                                                                | 24,800               | 23,400               | 0.6             |
| Japan Information Center of Science and Technology          | JOIS, JOIS-F, STN-International                                                                               | Scientific and technological literature information on medicine, pharmaceuticals, science and engineering, factual data on DNA spectra and chemical compound property laws and standards, etc.                                             | 16,500               | 16,400               | 0.6             |
| KINOKUNIYA COMPANY LTD.                                     | DIALOG, QUESTEL, NUMERICA, EC Online, JOIS, WESTLAW, INFOCUE, ASSIST, DIALINE, G-Search, C&C-VAN, ELNET, etc. | Scientific and technological literature information on medicine, chemistry and patents, new business, corporate, newspaper and foreign book publications, etc.                                                                             | 13,859               | 13,682               | 1.3             |
| MARUZEN CO., LTD.                                           | DIALOG, QUESTEL/DARC, DIALINE, G-Search, JOIS, LEXIS, UTLAS, LEGI-SLATE                                       | Scientific and technological literature information, patent information, business and corporate information, publishing information, newspaper article information, etc.                                                                   | 13,280               | 12,870               | 3.2             |
| FUJITSU FACOM INFORMATION PROCESSING CORPORATION            | FENICS Comprehensive Database Service, G-Search                                                               | Newspaper article information, corporate information, magazine and book information, industrial, economic and management information, etc.                                                                                                 | 8,820                | 8,600                | 2.6             |
| TEIKOKU DATABANK, LTD.                                      | COSMOSNET (including COSMOS-1,2)                                                                              | Corporate information, personal information, etc.                                                                                                                                                                                          | 6,146                | 6,083                | 1.0             |
| Japan Patent Information Organization (JAPIO)               | PATOLIS, PATOLIS-INPADO                                                                                       | Japanese and foreign patent information                                                                                                                                                                                                    | 5,754                | 5,517                | 4.3             |
| NIPPON SHUPPAN HANBAI INC.                                  | NOCS                                                                                                          | Book and magazine information, etc.                                                                                                                                                                                                        | 4,900                | 4,200                | 16.7            |
| JAPAN INFORMATION PROCESSING SERVICE CO., LTD.              | JIP/Infostream, (BRS, ORBIT, DRUGBASE, KIKAKUNET, MEDX)                                                       | Scientific and technological literature information, patent information, medical and pharmaceutical information, standards information, etc.                                                                                               | 4,550                | 4,470                | 1.8             |
| KK KYODO NEWS SERVICE                                       | Telerate                                                                                                      | Financial, stock prices and commodity market information, general news article information                                                                                                                                                 | 4,500                | 4,300                | 4.7             |
| TOHAN Co., Ltd.                                             | SUPER TONETS                                                                                                  | Newly published book and magazine information                                                                                                                                                                                              | 3,930                | 3,730                | 5.4             |
| TOKYO SHOKO RESEARCH, LTD.                                  | TSR-BIGS, TSR-FINES, TSR-VAN                                                                                  | Corporate and finance information, information on corporate representatives and corporations paying large amounts of taxes, etc.                                                                                                           | 3,864                | 3,727                | 3.7             |
| KOKUSAI INFORMATION SERVICE CO., LTD.                       | DJNR, NEWSNET, Data-Star, FT Profile, Nikkei Telecom, etc.                                                    | Domestic and overseas corporate, economic and financial information, medical and scientific information, etc.                                                                                                                              | 3,550                | 3,550                | 0.0             |
| USACO Corporation                                           | BRS, ORBIT                                                                                                    | Medical, pharmaceutical and cultural science information, patent information                                                                                                                                                               | 3,000                | 3,000                | 0.0             |
| Electronic Library Inc.                                     | ELMOR, ELDB, ELSDI, etc.                                                                                      | Newspaper and magazine article information                                                                                                                                                                                                 | 1,500                | 1,400                | 7.1             |
| Nichigai Associates, Inc.                                   | NICHIGAI-ASSIST                                                                                               | Who's who, book information, magazine article information, management and business information, etc.                                                                                                                                       | 1,349                | 1,349                | 0.0             |
| Japan Construction Information Center                       | JACIC NET                                                                                                     | Construction administration news, personal affairs and public works-related information, building materials and technology, corporate information, etc.                                                                                    | 1,242                | 1,239                | 0.2             |
| Mitsubishi Research Institute, Inc.                         | DIALINE (29 DB files focusing primarily on JAPAN/MARC)                                                        | National Diet library information, new publications information, etc.                                                                                                                                                                      | 1,220                | 1,090                | 11.9            |
| TOYO INFORMATION SYSTEMS CO., LTD.                          | BRANDY                                                                                                        | Retrieval of similar trademarks                                                                                                                                                                                                            | 1,200                | 1,200                | 0.0             |
| Chemical Data Service Incorporated                          | CD-NET                                                                                                        | Chemical industry-related newspaper information, chemical product information, corporate information, statistical information                                                                                                              | 393                  | 380                  | 3.4             |
| Intec Inc.                                                  | IGDS/I.P. Sharp                                                                                               | Economic, financial, energy and air traffic information                                                                                                                                                                                    | 142                  | 142                  | 0.0             |
| Tokyo Kantei Corp.                                          | Nationwide apartment database                                                                                 | Real estate information                                                                                                                                                                                                                    | <sup>2)</sup> 75     | <sup>3)</sup> 85     | -11.8           |
| Total for 26 Online Information Service Companies (Vendors) |                                                                                                               |                                                                                                                                                                                                                                            | 309,492              | 299,454              | 3.4             |

\*1 No. of dedicated terminals

\*2 2,700 in terms of no. of users

\*3 2,600 in terms of no. of users

\*4 Includes some companies functioning as both producers and vendors

Source: Nikkei Business Publications, Inc. "NIKKEI NEW MEDIA (1993. 7.26 page 5)"

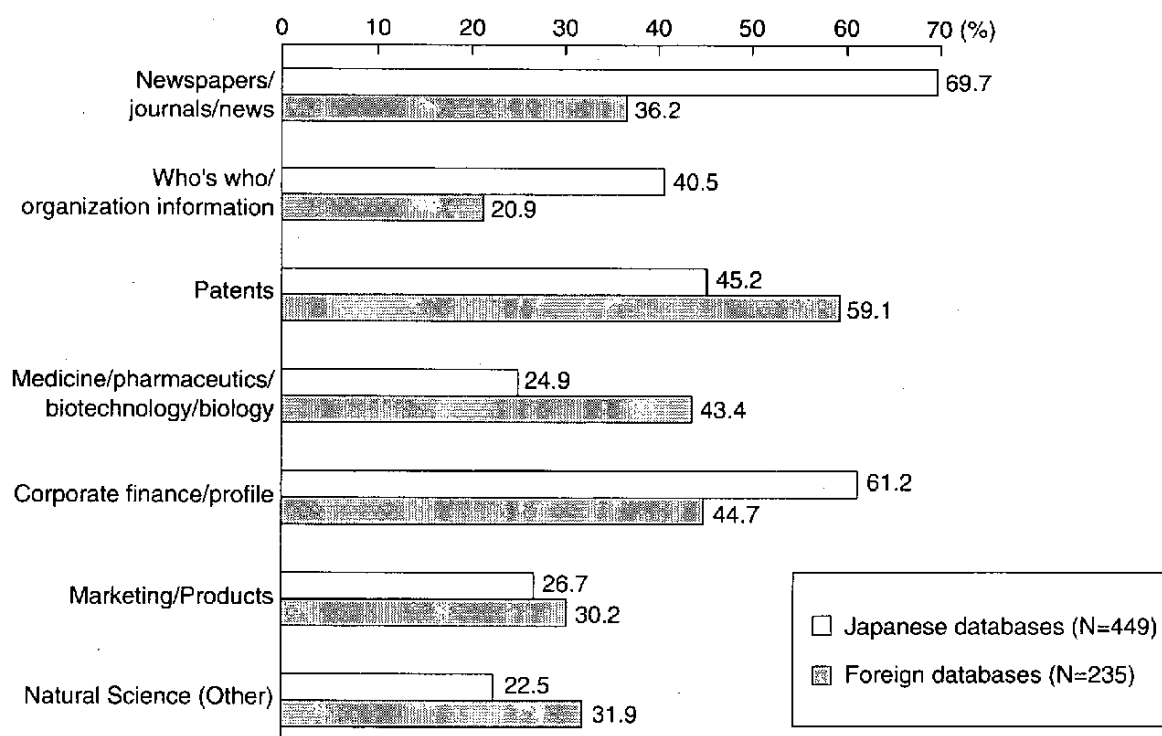


Figure 4-2 Categories of Frequently Used Databases (Multiple Replies)

### 3.3 Categories of Frequently Used Databases

Figure 4-2 provides a summary of those replies pertaining to the categories of frequently used commercial databases according to whether they are produced in Japan or overseas. In the case of Japanese databases, the top category is “newspapers/journals/news” (69.7%). This is followed by “corporate finance/profile” (61.2%), “patents” (45.2%), and “who’s who/organization information” (40.5%). On the other hand, the most frequently categories among foreign databases consist of “patents” (59.1%), “corporate finance/profile” (44.7%), “medicine/ pharmaceutics/biotechnology/biology” (43.4%) and “newspapers/journals/news” (36.2%). As an overall trend, Japanese databases are used most frequently in the categories related to general information or business, such as “newspapers/journals/news” and “who’s who/organization information”, while foreign databases are used most frequently in the categories relating to natural sciences such as “patents” and “medicine/pharmaceutics/biotechnology/ biology”.

## 4. Online Database Utilization

### 4.1 Method of Using Online Database

In the case of using databases on an online basis, the most conventional method of use is to

---

display the retrieved data on a terminal and then to get those hard copies. This manner of use was listed by 90.8% of the 448 replying companies, demonstrating an overwhelmingly large number in this current survey. In addition, usage involving downloading the results followed by processing (26.3%) and use after accumulating in an inhouse database (15.8%) both increased slightly from the previous survey. Thus, it appears that users are able to select the manner in which they use databases according to the form of the data or system specifications.

## **5. Other Forms of Database Utilization**

As was mentioned in the section discussing the proportion of online database utilization, there has recently been a growing trend towards an increased number of users utilizing both online and offline database services. Overall, the most common method of use involved "requesting hard copies, faxes and so forth from vendors", listed in 57.3% of the replies. This was followed by "purchasing commercial databases on MT, FD or CD-ROM" (37.9%) and "use of SDI" (36.3%).

## **6. Issues on Pricing and Utilization**

### **6.1 Pricing Issues**

There were 318 replies from companies that expressed dissatisfaction with the price of database information, corresponding to 71.1% in terms of the overall average. This figure represents an increase from the results of the previous survey.

Next, when questioned as to whether they considered costs other than information costs to be comparatively high, 40.6%, or 169 companies answered "yes". A breakdown of these replies indicates these to be "telecommunications costs" (46.1%), "terminal equipment excluding telecommunications equipment" (27.3%) and "telecommunications software" (26.7%).

### **6.2 Utilization Issues**

Table 4-5 lists various problems concerning commands or operation and function of database services. 62.6% of the 423 replying companies selected "inconsistent commands". Other problems listed by respondents included "slow search speed" (39.5%) and "need for a comprehensive thesaurus" (35.0%). This order is the same as that in the previous survey. Overall, the proportion of those companies that selected "inconsistent commands" is extremely high (74.1%) among members of secondary industry, while considerable interest was expressed regarding "slow search speed" and "downloading" in tertiary industries.

**Table 4-5 Comment of Functions, Operability and Commands of Commercial Database (Multiple Replies)**

| Problems                                                                                                    | (%)                        |                           |         |
|-------------------------------------------------------------------------------------------------------------|----------------------------|---------------------------|---------|
|                                                                                                             | Secondary Industry Average | Tertiary Industry Average | Total   |
| Inconsistent commands                                                                                       | 74.1                       | 48.0                      | 62.6    |
| Insufficient function keys                                                                                  | 9.5                        | 8.1                       | 8.5     |
| Only command driven is available for searching                                                              | 9.0                        | 8.1                       | 8.7     |
| Only menu driven is available for searching                                                                 | 10.0                       | 7.4                       | 7.6     |
| Insufficient keywords                                                                                       | 21.4                       | 18.9                      | 20.8    |
| Need of a comprehensive thesaurus                                                                           | 40.3                       | 31.1                      | 35.0    |
| Need function that allows reference to the appearance frequency of specific keywords by file or by database | 12.9                       | 10.8                      | 12.5    |
| Unable to perform downloading                                                                               | 21.4                       | 33.8                      | 26.5    |
| Lack of gateway function                                                                                    | 19.9                       | 10.8                      | 16.1    |
| Need functions that apply to expert systems                                                                 | 10.4                       | 8.8                       | 9.7     |
| Natural language necessary as search language                                                               | 26.4                       | 18.2                      | 22.0    |
| Machine translation necessary as a function                                                                 | 9.0                        | 9.5                       | 7.6     |
| Problems with connection procedures                                                                         | 13.9                       | 19.6                      | 16.5    |
| Slow search speed                                                                                           | 35.3                       | 43.9                      | 39.5    |
| Others                                                                                                      | 3.5                        | 6.1                       | 5.2     |
|                                                                                                             | (N=201)                    | (N=148)                   | (N=423) |

## 7. Increased Database Utilization by PC Network Services

Database utilization via PC network services is increasing. 332 (47.1%) of the replying companies indicated that they are using PC network services, corresponding to an increase of 7.3 points from the level of 39.8% of last year's survey. This means that nearly half of all replying companies are using PC network services. In addition, there are 67 companies (9.5%) that indicates they are using "CAPTEN", while 59 of those companies (8.4%) are also using PC network services. Looking at the utilization rate of PC network services by company size, the rate is 42.3% for small and medium-size businesses and 49.1% for large companies. By industrial category, similar to the results of the previous survey, "data processing and information service" demonstrated the highest rate, with 74 of 122 companies (60.6%) in this category indicating that they use PC network services. Although there is a gap in the utilization rate of PC network services between the average of secondary industries and that of tertiary industries, the results of this survey indicate that the gap is shrinking, with the average of secondary industries being 47.5% and that of tertiary industries being 48.4%.

On the other hand, since CAPTEN requires the installation of special equipment, its

**Table 4-6 Frequency-Used PC Network Service Menus (Multiple Replies)**

| Menu                            | Company size           |                  |                  | (%) |
|---------------------------------|------------------------|------------------|------------------|-----|
|                                 | Small/medium<br>(N=47) | Large<br>(N=215) | Total<br>(N=317) |     |
| Database                        | 63.8                   | 58.6             | 58.4             |     |
| Electronic mail                 | 44.7                   | 59.5             | 54.3             |     |
| BBS (electronic bulletin board) | 25.5                   | 34.0             | 36.3             |     |
| Electronic conferences          | 19.1                   | 11.2             | 11.7             |     |
| Transaction services            | 4.3                    | 4.2              | 3.5              |     |
| Others                          | 6.4                    | 6.5              | 6.6              |     |

utilization rate is only 2.6% among small and medium-size business in contrast to a utilization rate of 10.5% among large companies. Looking at these figures by industrial category, 6 of 27 companies (22.2%) in the "finance and insurance" category indicates that they use CAPTEN services, the highest rate records in this survey. Since the highest rate is only 22.2%, this indicates that all industrial categories are not making significant use of CAPTEN services. As the result was 12.1% when the utilization rate of Videotex (including CAPTEN) services was surveyed in the 1989 edition of "Databases in Japan", the use of these services has not grown so significantly since that time.

Examples of frequently used PC network services include "NIFTY-Serve" (63.8%), "PC-VAN" (23.1%) and "Nikkei MIX" (8.4%). The concentration of PC network service utilization on "NIFTY-Serve" has grown since the previous survey. This trend is the same both when analyzed by company size and industrial category.

Examples of frequently used menus in overall PC network services include "database" (58.4%) and "electronic mail" (54.3%) (Table 4-6). Although "electronic mail" ranks first among large companies, "database" ranks first among small and medium-size businesses by a large margin (63.8%). This is believed to indicate that PC network services play the major role in database utilization by small and medium-size businesses.

## **8. Increased Database Utilization with CD-ROM**

### **8.1 Utilization of Information on CD-ROM**

107 of 711 (15.0%) companies replied that they currently use commercial information on CD-ROM (such as databases and so on). This corresponds to an increase of 2.6 points from the previous survey. The utilization rate of databases with CD-ROM has increased for four consecutive years from a level of 7.5% in 1988. The level of 15% in the current survey for 1991 represents a two-fold increase over the level three years ago. Although the utilization rate itself is not considered to be high, utilization is increasing steadily.

Looking at the utilization rates by industrial category, that for public services such as education institutions and libraries is high (22.7%) in view of the nature of the system and data.

## 8.2 Categories of Information Use

With respect to the categories of information currently being used on CD-ROM, 36 of 104 companies (34.6%) selected "bibliography/publications", 34 (32.7%) selected "medicine/pharmaceutics/biotechnology/biology", and 24 (23.1%) selected "dictionaries/ encyclopedias/ directories".

## 8.3 Currently Used CD-ROM Software

Table 4-7 shows the list of CD-ROM software currently being used. Among the 96 replying companies, 27 (28.1%) use J-BISC, 20 (20.8%) use KOJIEN, and 19 (9.8%) use MEDLINE. Looking at these results by industrial category, unexamined patent applications, MEDLINE and so forth are frequently used by secondary industries similar to the findings for online database services. In addition, general software, such as J-BISC and CD-HIASK, is used by companies in all industrial categories.

**Table 4-7 Currently Used CD-ROM Software (N=96, Multiple Replies)**

| Order | No. of Replies | CD-ROM Software                             |
|-------|----------------|---------------------------------------------|
| 1     | 27             | J-BISC                                      |
| 2     | 20             | KOJIEN                                      |
| 3     | 19             | MEDLINE                                     |
| 4     | 17             | CD-HIASK                                    |
| 5     | 13             | Unexamined Patent Applications              |
| 6     | 12             | DIALOG OnDisc                               |
| 7     | 8              | Companies Listed on Japan's Stock Exchanges |
| 7     | 8              | Unexamined Utility Model Applications       |
| 9     | 7              | Current Contents                            |
| 9     | 7              | Legal Base                                  |



## **V Database Utilization and Education at Universities**

### **1. Survey Outline and Methodology**

Although database utilization is spreading from the fields of science and technology to business fields and even personal use, rudiments to use databases effectively (database literacy) does not yet exist through the general public. Database utilization is indispensable for active use of information in a highly advanced information society, and database education is essential to achieve its proliferation.

Since education concerning database utilization and so forth at universities is considered to have major influences on the future of database utilization, the Database Promotion Center, Japan (DPC) commissioned a survey entitled "Study on use of database at universities" to Nichigai Associates, Inc. in 1991. An except of that survey is shown here.

The survey was conducted using questionnaires from July to October 1991 targeted at 1,092 state universities, public universities, private universities and junior colleges throughout Japan. The overall collection rate was 56.9%. Furthermore, since there were universities that submitted replies for individual departments instead of for the entire university, the number of replies in the survey forms exceeds the number of universities. Thus, the number of replies is either for an entire university or an individual department.

The questionnaires were composed of three types of survey forms consisting of those "for universities in general", "for supervising instructors of database utilization education" and "for libraries".

### **2. Implementation Status of Database Utilization Education**

#### **2.1 Utilization Education being Implemented at More Than 25% of Universities Surveyed**

At present, database utilization education is being implemented at 182 universities and departments (27.0%) of the 673 universities and departments surveyed (effective no. of replies), meaning that more than 1/4 of all universities and departments are currently implementing database utilization education. Thus, the state of utilization education at universities in Japan can be said to still be in the early stages. However, there is a total of 101 universities and departments (15%) that replied that they either had definite plans or were still planning some form of database education in response to a question relating to their future

---

plans that asked about a schedule for establishing new courses related to database utilization education. Thus, there appears to be a strong desire to strengthen utilization education in the future. 59 of the 77 universities and departments that replied they were still planning some form of database utilization education are universities and departments at which utilization education is presently not being implemented, thus indicating an aggressive stance with respect to working on the establishment of database utilization education programs in the future.

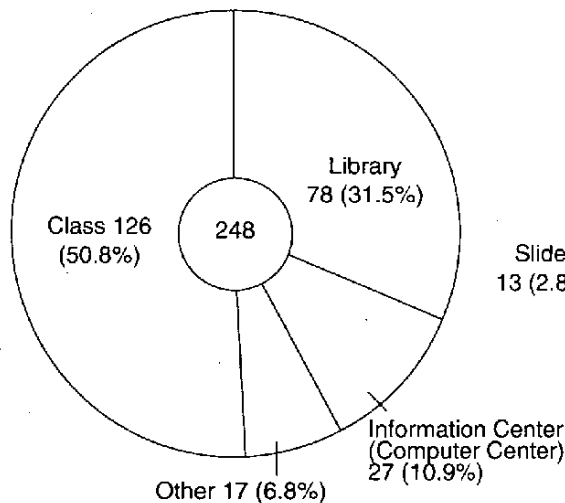
Looking at the locations where database utilization education is being implemented, the most common location is "class", accounting for 50.8% of the total. This is followed by "library" (31.5%) and "information center (computer center)" (10.9%) (Figure 5-1).

## **2.2 Description of Classroom Education**

In the case database utilization education is implemented in class or an information center (computer center), the supervising instructor was asked to reply to the questions. One survey form was provided for each subject, and the effective number of replies was 323.

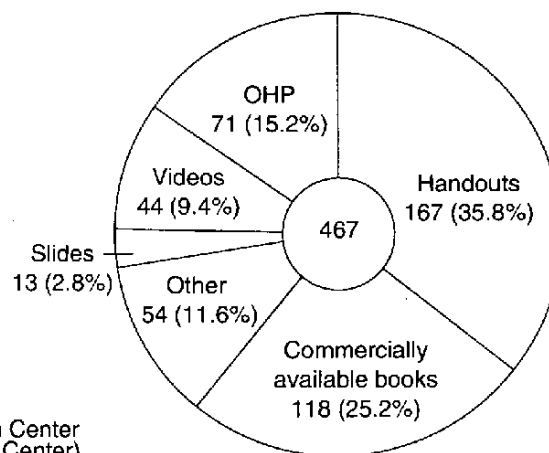
The majority (71.7%) of database utilization education is implemented in the form of a specialized subject. It is only implemented as a general subject at 15.2% of the universities and departments. In addition, there are a few differences between it being implemented as an elective (49.4%) or required subject (43.6%). Looking at the departments that are responsible for these courses, they are most frequently supervised by the Business Department (21 subjects), Literature Department (20), Economics Department (19), Medical Department (18), Agriculture Department (15), and Pharmaceutical Department (8). The year in which this subject is required was most frequently the 2nd year followed by the 3rd year. When the course extends over more than one school year, it is given most frequently over the 1st and 2nd years as well as the 3rd and 4th years, and given over the 1st, 2nd and 3rd years as well as 2nd, 3rd and 4th years in some cases.

Looking at the number of students taking these classes, 45.5% of the classes have 50 students or less, indicating a class size is relatively small. This is believed to be due to the nature of the subject in that database utilization education requires the implementing of practical exercises. The number of universities and departments that replied they are implementing both lectures and practical exercises accounted for 79.9% of the total, significantly surpassing the level of 14.2% of the number implementing lectures only. When the respondents who replied that they were implementing lectures only were asked the reason they do not implement practical exercises, inadequate facilities (such as the number of terminals) is the most common reply. Other reasons are "preparations currently in progress", "not implemented based on policy", "budgetary difficulties" and "only implemented for those who desire it".



**Figure 5-1** Locations of Database Utilization Education (Multiple Replies)

Source: "Study on use of database at universities", DPC, Nichigai Associates, Inc.



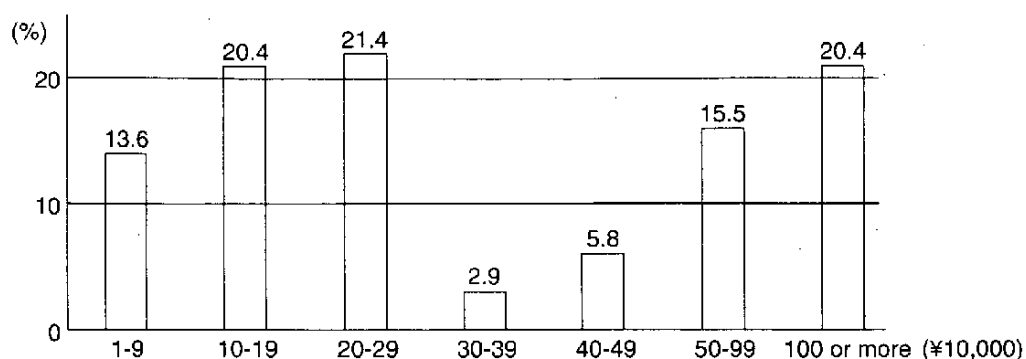
**Figure 5-2** Types of Texts Used in Database Utilization Education (Multiple Replies)

Source: "Study on use of database at universities", DPC, Nichigai Associates, Inc.

Handouts are the most common form of text used in these classes, accounting for 35.8% of the total. This is followed by the use of commercially available books (25.2%) and OHP (15.2%). Possible reasons for the predominant use of handouts include a lack of suitable textbooks for database utilization education as well as the need to frequently update the contents of texts due to the rapid progress of databases themselves. With respect to the commercially available books used in these classes, those in the fields of information and information science are used most commonly (Figure 5-2).

Looking at annual costs in the case of implementing practical exercises, although there is a considerable range from a minimum of 10,000 to a maximum of ¥2.2 million, those universities and departments spending less than ¥0.3 million account for the majority. On the other hand, those spending more than ¥1 million also accounted for a sizable proportion at 20.4% (Figure 5-3).

With respect to the answers of students to database utilization education, a total of 68 of the effective number of 323 replies indicates that students have either interest or a favorable evaluation, indicating a positive reaction. There are even some replies that indicates that students were using this as the subject for the preparation of graduation theses and reports.



**Figure 5-3 Annual Costs of Practical Exercises in Database Utilization (N=103)**

Source: "Study on use of database at universities", DPC, Nichigai Associates, Inc.

## 2.3 Utilization Education at University Libraries

554 universities and 635 libraries replied to questions directed at university libraries. This is because replies were obtained from universities having separate libraries. 208, or roughly 1/3 (32.8%), of these libraries are implementing database utilization education. Looking only at those libraries using database services (270), some form of database utilization education is being implemented at 134 of those libraries, or roughly half of the total. The contents of this education range from an introduction to databases to the implementation of "retrieval exercises" using actual databases, thus indicating a considerable difference in content.

One of the most common ways is that the classes for the database utilizing education is only held upon requests from the students (37.4%). This is followed by "student orientation at the time of admission" (24.0%) and "regular lecture classes" (12.5%). In addition, 10.0% of these universities and libraries "distribute reference materials only".

## 3. Database Utilization Status

### 3.1 Database Utilization in Classes

A survey was conducted to know what databases are used in database utilization education in classes and so on. The forms in which databases are used can be divided into the following three categories:

- (1) Use of external databases on an online basis;
- (2) Purchase of external databases on magnetic tape, construction of original inhouse databases, or use on an online basis by means of inhouse LAN;
- (3) Use of packaged database such as CD-ROM.

With respect to category (1) concerning external online databases, the database of the National Center for Science Information Systems (NACSIS) is used most commonly, being listed in 29 replies. This is followed by Nikkei Telecom of the Nihon Keizai Shimbun, Inc. (27), DIALOG produced in the U.S. (26), and JOIS of the Japan Information Center of Science and Technology (25). Although the databases ranked at the top are essentially the same as those mentioned in the utilization status by general companies (see Table 4-2), some major differences include NACSIS, a shared service of university libraries, being ranked no. 1, and hardly any use of PATOLIS, the specialized database related to the field of patents (Table 5-1).

With respect to category (2) concerning use of external databases, the NEEDS database of the Nihon Keizai Shimbun, Inc. is used far more than any other databases, being listed in 11 replies. This form of use involves purchasing corporate financial data and economic statistical data on magnetic tape and containing that data on an inhouse online system such as LAN. An example of this type of use is being employed at Kwansei Gakuin University. Among those universities and libraries, databases of books on stock at their library are the most common, being listed in 6 replies. There are a total of 26 replies, and those replies listing other types of databases are quite a few in number.

In the case of category (3) concerning packaged databases, J-BISC, the book and

**Table 5-1 Online Databases Frequently Used at the University Classes (N=323, Multiple Replies)**

| Name of databases   | No. of utilization |
|---------------------|--------------------|
| NACSIS (-IR, CAT)   | 29                 |
| Nikkei Telecom      | 27                 |
| DIALOG              | 26                 |
| JOIS                | 25                 |
| NIFTY-Serve         | 10                 |
| NICHIGAI-ASSIST     | 8                  |
| NIKKEI NEWS TELECOM | 5                  |
| C&C VAN             | 5                  |
| DIALINE             | 3                  |
| G-Search            | 3                  |
| NEEDS-IR            | 2                  |
| STN                 | 2                  |
| CompuServe          | 2                  |
| N-1 network         | 2                  |
| UTOPIA              | 2                  |
| Others              | 13                 |

**Table 5-2 Package Databases Frequently Used in Classes (N=323, Multiple Replies)**

| Name of databases                           | No. of utilization |
|---------------------------------------------|--------------------|
| J-BISC                                      | 23                 |
| CD-HIASK                                    | 8                  |
| KOJEN                                       | 8                  |
| CD-BOOK                                     | 5                  |
| MEDLINE                                     | 5                  |
| ULP                                         | 3                  |
| Basic Knowledge of Current Terms            | 3                  |
| Current Contents                            | 3                  |
| N-BISC                                      | 2                  |
| ERIC                                        | 2                  |
| Companies listed on Japan's Stock Exchanges | 2                  |
| Others                                      | 29                 |

Source: "Study on use of database at universities", DPC, Nichigai Associates, Inc.

Source: "Study on use of database at universities", DPC, Nichigai Associates, Inc.

---

publication database of the National Diet Library, is used most commonly, being listed in 23 replies. This is followed by the CD-HIASK containing newspaper article information of The Asahi Shimbun, as well as CD-ROM versions of the KOJEN dictionary of Iwanami Shoten Publishers Ltd. (Table 5-2).

### **3.2 Databases Used at Libraries**

There are 270 libraries using databases, accounting for 42.5% of the total. This figure also contains a considerable number of libraries using commercial databases only. It is believed to be important to be aware of the present state of database use involving the direct use of commercial databases as well.

Next, the respondents were asked about what types of databases they use. Online refers to the use of commercial databases and so forth on an online basis. Respondents were asked the name of the online service system as well as the name of the database used. Package refers to book and magazine databases recorded on CD-ROM as well as electronic books. Respondents were thus asked their names as well as the forms of use. "Original" refers to catalogs of books on stock in libraries and originally produced databases. Respondents were asked whether they used an existing external database at the time of production as well as the number of data items contained.

Among a total of 270 libraries using databases, those using online databases are the most common at 213 (78.9%). These are followed by 193 libraries using package databases (71.5%) and 166 libraries using original databases (61.5%). There are 109 libraries using all of these three forms, corresponding to 40.4% of the total number of libraries using databases.

Those online databases that are frequently used at university libraries are shown in Table 5-3. The three most commonly used databases consist of the National Center for Science Information Systems (NACSIS), DIALOG produced in the U.S., and JOIS of the Japan Information Center of Science and Technology. Although the order varies somewhat, there are essentially the same databases that are frequently used in university classes (Table 5-1). With respect to the number of terminals, the majority of libraries have 5 or less. Those libraries with one terminal accounted for 70%, while those with 5 terminals or less accounted for 91.7%.

With respect to the monetary amount of database use, there are two different ways to charge. One is payment by public expenditures and the other is payment by the users. Those libraries at which costs are covered through public expenditures were the most common at 140, while there are 70 libraries at which users paid for costs. There are also 65 libraries at which database services for which costs are covered both by public expenditures and users.

Frequently used examples of package databases include book and magazine databases such as those of J-BISC of the National Diet Library, ULP produced in the U.S., and MEDLINE (Table 5-4). CD-ROM packages accounted for the majority of use at 86% (193 of 213

**Table 5-3 Online Databases Frequently Used at University Libraries (N=635, Multiple Replies)**

| Name of databases                           | No. of libraries using databases |
|---------------------------------------------|----------------------------------|
| NACSIS (-IR, CAT)                           | 200                              |
| DIALOG                                      | 148                              |
| JOIS                                        | 147                              |
| Nikkei Telecom                              | 49                               |
| STN                                         | 36                               |
| NICHIGAI-ASSIST                             | 14                               |
| National Institute of Japanese Literature   | 13                               |
| FAIRS (Kyoto University)                    | 13                               |
| National Institute for Educational Research | 11                               |
| UTOPIA (University of Tsukuba)              | 11                               |
| TOOL-IR (The University of Tokyo)           | 11                               |
| G-Search                                    | 7                                |
| WINET (Waseda University)                   | 7                                |
| DIALINE                                     | 6                                |
| UTLAS                                       | 5                                |
| BRS                                         | 5                                |
| Others                                      | 47                               |

Note: No. of libraries using databases: 270

Source: "Study on use of database at universities", DPC, Nichigai Associates, Inc.

**Table 5-4 Package Databases Frequently Used at University Libraries (N=635, Multiple Replies)**

| Name of databases                           | No. of libraries using databases |
|---------------------------------------------|----------------------------------|
| J-BISC                                      | 111                              |
| ULP                                         | 56                               |
| MEDLINE                                     | 56                               |
| CD-HIASK                                    | 43                               |
| KOJEN                                       | 29                               |
| Current Contents                            | 25                               |
| CD-BOOK                                     | 18                               |
| AURORA                                      | 17                               |
| N-BISC                                      | 15                               |
| CD-WORD                                     | 14                               |
| EXCEPTA MEDICA                              | 12                               |
| OED                                         | 12                               |
| Companies listed on Japan's Stock Exchanges | 11                               |
| Six Codes of Laws                           | 10                               |
| CD-NOCS                                     | 9                                |
| Bibliofile                                  | 8                                |
| Legal Base                                  | 8                                |
| Basic Knowledge of Current Terms            | 8                                |
| Ulich                                       | 6                                |
| ERIC                                        | 6                                |
| Others                                      | 87                               |

Note: No. of libraries using databases: 270

Source: "Study on use of database at universities", DPC, Nichigai Associates, Inc.

---

libraries). These are followed by floppy disc use (20 examples) and electronic book use (6 examples). There are also several other examples. There are three examples of providing CD-ROM database service on an inhouse LAN system.

Looking at the number of terminals for package databases, those libraries with only one terminal accounted for 69.4% of the total, while those with five or less terminals accounted for 87.5%. The terminals are used at free charge at almost all the libraries.

With respect to original databases, databases of catalogs of books on stock in their libraries are overwhelmingly common at 91% (165 of 197 libraries). However, there are also 17 examples of libraries having created unique databases.

Although there is some variation in the number of data items contained in book catalog databases for reasons including the number of books on record and the time at which database production is started, those libraries with 50,000-200,000 items in their databases are the most common. There are also some libraries with databases containing over 1 million items.

There are a large number of libraries (48%, 94 of 197 libraries) seen at which external databases are used in the production of original databases (such as JAPAN MARC). It indicates creating book catalog databases has become easier than in the past.

With respect to the number of user terminals for original databases, those libraries having 2-5 terminals are the most common at 47.8%. These are followed by those having 1 terminal at 26.3%. The number of user terminals for original databases is greater than the number of user terminals for online database services and package databases. These terminals are able to be used at free charge at almost all the libraries.

When respondents were asked the manner in which they inform potential users of database utilization services, there were 205 libraries that replied they are notifying potential users, and 15 libraries that are not. The most common methods of notification are announcements in library bulletins (67 libraries) and announcements in guides to library use (126 libraries). Other methods included posting in libraries and so forth, placement in university bulletins and publications, notification through library committee members and notification to individual instructors.

## **VI Database Promotion Policies of the Ministry of International Trade and Industry (MITI)**

### **1. Overall Database Production Measures**

Databases are one of the cornerstones of a highly advanced information society both in terms of hardware and software. They are also indispensable in the present information society that is said to be virtually inundated with information. In addition, industries in Japan are presently promoting the introduction of databases in a diversity of fields. However, it is still necessary to continue to study the effective construction and utilization of databases in the true sense. Moreover, accompanying the internationalization of Japan's economic society, it is also necessary to promote exchange of information with foreign countries.

Accordingly, MITI is implementing overall measures for the production of databases through the eight policies described below. Moreover, it is also surveying trends regarding the diverse range of information services that supply information through various types of systems and media.

#### **1.1 Development Program Surveyed for Important Databases**

Although the use of information in Japan in the past has been primarily led by the development of hardware and software as well as the development and proliferation of information systems that integrated these, in order to further promote the use of information in the future, it will also be important to organize and expand the information itself that is supplied through these information systems. In an information society, databases allow highly advanced utilization of information by serving as a means of efficiently and comprehensively gaining access to vast amounts of information. These databases are also becoming increasingly essential in accommodating the development and internationalization of the economy and society in Japan. The databases indicated in (1) through (4) below are considered to be particularly important for the growth and development of the economy of Japan. The production of these databases should be aggressively promoted through joint efforts and corporations among the sectors of industry, education and government.

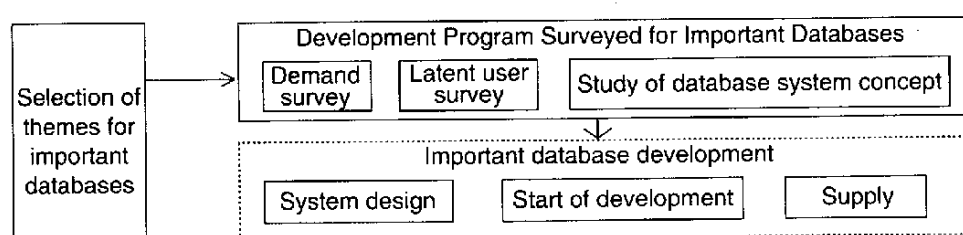
- (1) Databases that comprehensively contain fundamental data required for future growth of industrial and social activities, and which can create new resources for those activities;
- (2) Databases that can be supplied to a wide range of the industrial society;
- (3) Strategically important databases from an international viewpoint (that is, those that are

databases unique to Japan while also being recognized internationally); and,

- (4) Databases that are required by society, but for which construction of those databases is difficult to implement smoothly by the private sector alone due to a large number of uncertainty factors, such as information contents, specific needs with respect to the supply form, systems for collection of raw information and the technical potential of the system composition.

Several themes have been selected each year regarding the databases described above. Those that are selected are designated as important databases and feasibility studies are then conducted regarding the construction of those databases. Some specific examples of the contents of these feasibility studies include determination of latent users, surveying the need to specify raw information for which database use is expected, determination of the generation status of raw information, surveying the need to confirm the existence of raw information, and studying the system concept by which conceptual production of the system for database construction and supply is to be carried out (Figure 6-1).

The Development Program Surveyed for Important Databases was begun in 1986. Surveys have been conducted on a total of 25 themes, consisting of 4 in 1986, 5 in 1987, 4 in 1988, 4 in 1989, 4 in 1990 and 4 in 1991. Three themes have been selected for 1992 (Table 6-1), and surveys are presently in progress. Among those survey themes that have already been implemented, service has already gotten started for the JAN Item Code File Service (Distribution Systems Research Institute and others).



**Figure 6-1 Flow Chart of the Development Program Surveyed for Important Databases**

## 1.2 Database Globalization

The need for access to Japanese databases from overseas has grown in recent years. According to the "Database Directory" compiled by MITI, databases produced overseas account for roughly 67% of all databases, indicating a state of overimporting of foreign databases distributed in Japan. On the other hand, there are growing demands from overseas calling for increased supply of Japanese information (databases). However, there has been little

**Table 6-1 Development Program Surveyed for "Important Databases" in 1992**

|      | Theme and Organization in Charge                                                                         | Summary                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------|----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1992 | Health Management Database for the Workplace<br>(Saneikai)                                               | Survey and study for constructing diagnostic support and educational databases as well as health-related legal databases considered to be necessary for supporting health maintenance in the workplace, particularly including diagnosis and aftercare for diseases related to the type of work and working environment.                                                                                                                      |
|      | Elderly Persons Human Engineering Database<br>(Research Institute of Human Engineering for Quality Life) | Facilitating the design of enjoyable products and an enjoyable environment by related industries for the realization of a society that allows a better way of life for the elderly is becoming an important issue. This theme involves a survey and study for the construction of databases focusing on the physical and function characteristics of the elderly to facilitate the design of enjoyable products and an enjoyable environment. |
|      | Database of Chemical Substance Safety Data Sheets<br>(Japan Chemical Industry Association)               | Survey and study for constructing an MSDS database in response to the need for MSDS (chemical substance safety data sheets) containing information on chemical substances relating to safety, emergency treatment, fire extinguishing methods and so forth to protect both workers and the environment.                                                                                                                                       |

progress made in the supplying of Japanese databases overseas for reasons including a lack of knowledge concerning overseas database markets, high translation costs and the lack of a support system for overseas sales and distribution.

In order to correct this imbalance between foreign and Japanese databases and effectively respond to overseas demand, surveys have been conducted on the promotion of construction of databases for overseas use and the establishment of a system for supplying databases overseas in an effort to achieve globalization of databases produced in Japan. These surveys were begun in 1989, and include surveys of overseas demand as well as surveys of latent overseas users.

### 1.3 Research for Database Production and Promotion

In order to widely proliferate databases throughout the general public as an effective means of efficiently utilizing information in the present information society, it is necessary to consider databases from not only the standpoint of the database producer and vendor, but also the standpoint of the end user. In addition, it is also necessary to provide database services by processing data in various ways to respond to the diverse needs of those users.

In order to accomplish this, together with conducting demand surveys among both users and suppliers with respect to databases and other information services, MITI has also been conducting research related to databases and information services for the purpose of examining problems regarding future databases and information services. This research has been conducted since 1984.

---

## **1.4 Implementation of the Database Directory System**

As a result of the sharing of information by a society currently inundated with information, and efficiently obtaining useful information contained within, database services make it possible to avoid excessive costs for acquiring information, promote the use of economical and social information, and be extremely effective in enhancing the results of various social and industrial activities.

However, since knowledge of these database services has not spread adequately throughout Japan, the "Database Directory System" was established in September 1982 to deal with this situation.

This system was established to create a "Database Directory", containing outlines of database services, utilization methods and so forth, based on reports from database service companies in an attempt to proliferate database services by making this directory available to the general public.

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

Furthermore, the "FD Edition of the Database Directory" has been published by DPC since 1987 in an effort to improve the level of database clearing services in Japan.

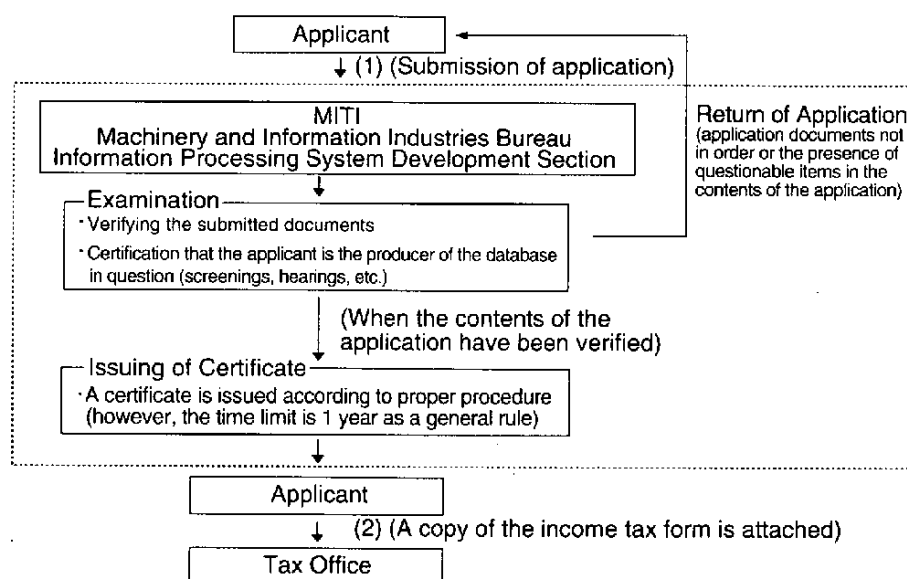
## **1.5 Tax Measures for Database Producers**

The initial investment on producing databases is tremendously large. In addition, collection of these investments extends over a long period of time. Moreover, since data rapidly becomes obsolete and needs constant updating and additions, producers are forced to bear a heavy financial burden at the time of database production.

In addition, even after a producer constructs a database and commences operations, in addition to routine maintenance costs, producers are forced to upgrade the system to improve the quality of database service in line with the rapid progress of information processing technology that has taken place in recent years. The Database Reserve Fund was established in 1987 to reduce this heavy burden placed on corporations.

This system forces corporations and individuals that construct databases supplied for use by the general public to set aside no more than 10% of sales from databases they produced in the form of a reserve fund to be allocated for database development costs. After being deterred for 4 years, that reserve may then be disposed of uniformly over a period of 4 years and declared as a loss.

To use this system, the corporation or individual has to apply to MITI in order to obtain a certificate stating that the database is produced by the applicant. The corporation or individual then reports to the tax office, presenting the certificate (Figure 6-2).



**Figure 6-2 Procedures for the Database Reserve Fund**

## 1.6 Support of Development of Efficient Database Operation Systems

The majority of current databases are offered through several independent services, thus hampering their availability to end users. This is also one of the problems that hinders market expansion.

Therefore, the Information-technology Promotion Agency, Japan (IPA) provides financing for the development of programs that provide support for the efficient operation of database services for the purpose of eliminating these problems.

## 1.7 Support for Database Production in the Private Sector

A system for providing support for the production of databases in the private sector has been established through capital subscription and low-interest financing from the Japan Development Bank.

This system involves the providing of loans from the Japan Development Bank to corporations constructing fundamental databases considered to be necessary for the future growth and development of industrial and social activities.

In addition, low-interest financing for equipment funds and non-equipment funds is also available from the Japan Development Bank for those persons engaged in the production or operation of databases in the private sector.

---

## **1.8 Production of Public Databases and Increased Access to Government-Owned Data by the Private Sector**

Public databases necessary for carrying out the administration of trade and industry, including technology databases relating to public research, economic databases for each country and databases related to small and medium-size businesses, should continue to be produced in the future.

In addition, together with expanding the supply of these databases to the private sector, efforts will be made to promote the supply of various types of statistical data and other government-owned data to the private sector in easily accessible forms such as magnetic tape, while also promoting the establishment of conditions for that supply.

## **2. Promotion of Regional Databases (New Media Community Concept)**

### **2.1 Ideology of the Concept**

The New Media Community Concept involves the construction of various model information systems to promptly respond to the industrial, social and domestic needs of regional communities, and together with evaluating factors such as convenience, economics and the effects on industry and society through the operation of those information systems, attempts to proliferate those information systems by promoting the construction and operation of information systems that facilitate the development and application of these model information systems. Promotion of this concept will not only result in promotion of the creation of an information infrastructure, but will also greatly contribute to the promotion of regional use of information and the formation of highly advanced information communities. In addition, it is also expected to promote the creation of a network that forms the foundation for a highly advanced information society with these model communities serving as the cornerstones of that infrastructure. This will lead to both the activation and sophistication of regional economy and society.

In 1992, four regions were newly designated as application and development regions, consisting of Maruseppu-cho in Hokkaido, Aomori prefecture, Shimodate-shi in Ibaraki prefecture, and Tatomi-cho in Yamanashi prefecture. This brings the total number of designated application and development regions to 89.

## **2.2 Financial Support for System Construction**

### **(1) Financing**

- (i) Interest-free financing using profit generated through sales of government-owned shares of Nippon Telegraph and Telephone (NTT)

Interest-free financing is applied through the Japan Development Bank and Hokkaido-Tohoku Development Corporation for third-sector corporations that promote the new media community concept.

- (ii) Special-Interest Financing by the Government Financial Institute

This includes the Information Promotion Plan provided by the Japan Development Bank, the Regional Information Promotion Plan provided by the Hokkaido-Tohoku Development Corporation and loans to small and medium-size businesses.

### **(2) Tax Incentives**

- (i) Regional Information Promotion Tax Reduction Plan

Expenses incurred by non-profit organizations or associations in their promotion of the new media community concept may be taxes as losses.

## **3. Research and Development of Interoperative Database Systems**

This project was established for the development of a system able to share large-scale distributed databases using different types of computers and having a different framework to allow handling of multimedia information, including character, graphics, image and voice data, for the purpose of establishing a technical infrastructure for the highly advanced information society in the 1990's and beyond.

More specifically, this project actively promotes cooperation among members of industry, education and government in the research and development of multimedia technology, distributed database technology, high reliability technology and interoperative network system technology.

The following lists the objectives of research and development of this system technology.

- (1) To secure the interoperability of information equipment and information systems in order to widen the range of equipment selected by users as well as avoid unnecessary investments.
- (2) To play a leading role in the future development of information systems in order to enhance the level of technology and alleviate the burden of developing huge systems on a national level.

- 
- (3) To contribute to the progress of worldwide information utilization through reflection of international standards.

This project was completed in the end of 1991, after having publicly released the Open Systems Interconnection (OSI) Specifications, the Interoperable Networking Event, and a conference on its results.

#### **4. Information Service for Small and Medium-Size Businesses**

The Small & Medium enterprise Information Research System (SMIRS), a database for small and medium-size businesses, will be improved and expanded in order to increase the capabilities of a small and medium-size business information network that connects the Japan Small Business Corporation and small and medium-size business regional information centers. This will be done for the purpose of ensuring rapid and efficient supply of information to small and medium-size businesses.

##### **(1) Small and Medium-Size Business Information Centers**

Small and medium-size business information centers within the Japan Small Business Corporation collect, analyze and generate management and technical information required by small and medium-size businesses. Together with compiling this information into a database in a form that is easy to use by small and medium-size businesses (this database is referred to as SMIRS), information will be supplied to regional small and medium-size businesses through small and medium-size business information centers located in each region.

##### **(2) Small and Medium-Size Business Regional Information Centers**

Small and medium-size business regional information centers collect and generate information for regional small and medium-size businesses to promote production of databases containing information unique to that region. In addition, they also perform retrieval services by receiving information supplied from small and medium-size business information centers within the Japan Small Business Corporation, and supplying that information to regional small and medium-size businesses in an easily understandable form.

##### **(3) Small and Medium-Size Business Information Network System**

This system is a computer network centering around the database for small and medium-size businesses (SMIRS) constructed by the Japan Small Business Corporation and small and medium-size business regional information centers. This system allows joint utilization of central information (Japan Small Business Corporation) and regional information (small and

medium-size business regional information centers) in an effort to rapidly and efficiently supply necessary information to small and medium-size businesses.

## 5. CD-ROM Unexamined Patent Gazettes

Amidst the rapid pace of technological innovations that have taken place in recent years in Japan, the number of patent applications filed has continued to increase. The number of patent applications particularly in the fields of OA equipment, computers, semiconductors and biotechnology has increased accompanying the growing sophistication of industry, demonstrating a 3-6 fold increase over the past 10 years. Thus, together with the increasingly sophisticated nature of their contents, rapid processing of examinations has become increasingly difficult. Moreover, the rapid increase in the number of patent applications has also made it more difficult for users of patent information to rapidly access the information they require.

Consequently, the Japan Patent Office began promoting its paperless plan for creation of a comprehensive computerized (paperless) system to cover all aspects of patent administration in April 1984. This paperless plan called for the use of computers to perform clerical processing of applications and examinations as well as patent information services electronically instead of using paper as in the past. This paperless system was useful in shortening examination time, expanding patent information services, improving the efficiency of clerical processing and promoting cooperation such as exchange of patent information at the international level.

Acceptance of electronic applications of patents and utility models began on December 1, 1990, and patent information is now accumulating in the form of electronic data. Retrieval files

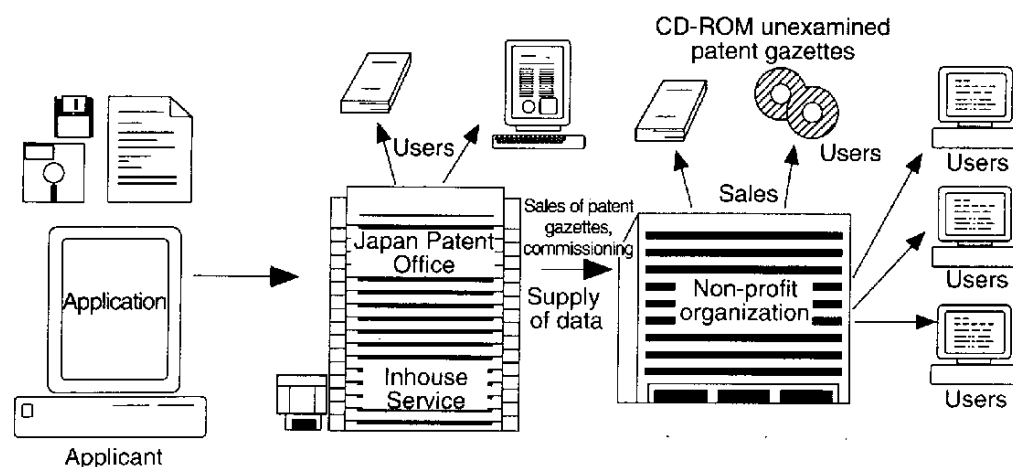


Figure 6-3 Schematic Diagram of Supply of Patent Information

Source: OHMSHA, LTD. "Electronic Filing of Patents and Utilization Methods"

and literature files developed for paperless system examinations as well as various other forms of patent information have been compiled in the form of a database. After having begun use of patent information accumulated in the form of electronic data, the Japan Patent Office then began issuing CD-ROM examined patent gazettes on January 8, 1993 in addition to the patent gazettes provided on paper in the past. Unexamined patent applications refer to applications for which the contents are made public for a period of 18 months after filing. These applications contribute to the development of technology through the public disclosure of leading-edge information in a wide range of technical fields.

Roughly 5,000 paper patent gazettes are currently issued annually by the Japan Patent Office (with each issue containing 100 patents). Since stacking these gazettes on top of each other would result in a stack roughly 150 meters high, the space required to store these gazettes is immense, thus making rapid access to patent information quite difficult. In contrast, CD-ROM unexamined patent gazettes can contain up to 5,000 applications on a single disk, thereby allowing storage space to be reduced to only 1/150th that of paper patent gazettes. The use of the various indices provided by the Japan Patent Office allows rapid access to this patent information.

Data contained in CD-ROM unexamined patent gazettes is prepared using data in electronic applications filed with the Japan Patent Office. Since application data contains both text code data (data such as character data) and image data (data such as drawings and chemical

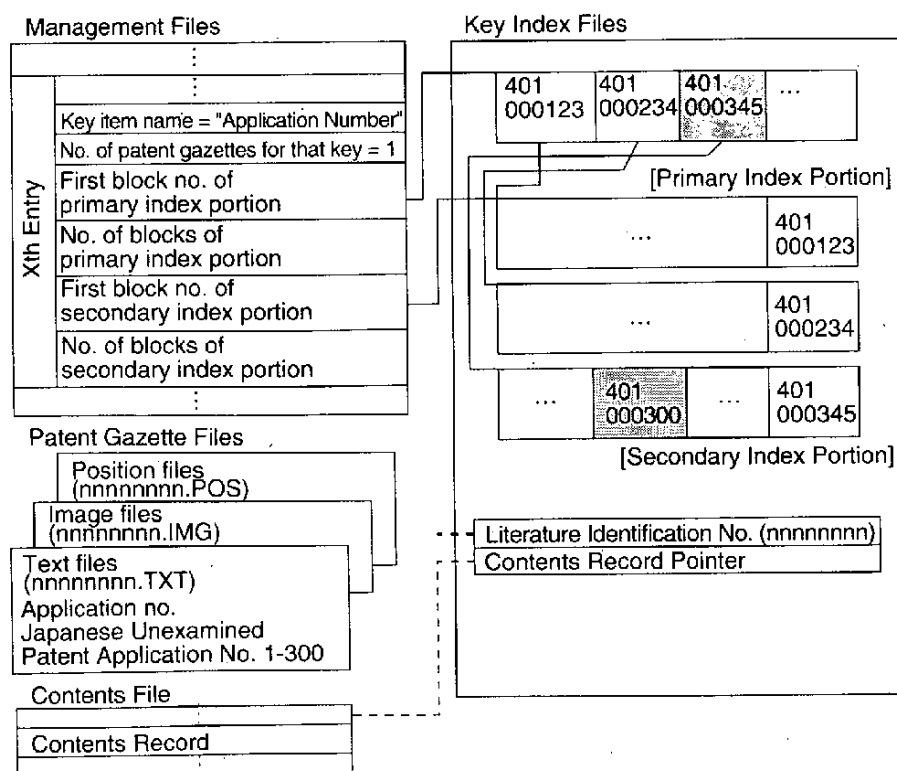


Figure 6-4 File Summary of Patent Gazettes and CD-ROM Unexamined Patent Gazettes

formulae), data is recorded on CD-ROM using mixed mode recording in consideration of ease of data compression as well as retrieval and processing. Each of the unexamined patent applications contained in these gazettes is composed of three types of files as a result of using this recording system. These three types of files consist of text files, containing character data, image files containing drawings and chemical formulae, and position files containing information regarding the arrangement and layout of each of the elements of unexamined patent application gazettes (such as the scope of claim for patent, abstract, drawings and so on). Explanations of each of these types of files are described to follow (Figure 6-4).

### **(1) Text Files**

These files comply with the SGML (Standard Generalized Markup Language) format in which data indicating logic structure, layout structure and so forth is inserted into the text. Information that indicates the logic structure consists of the elements of unexamined patent applications, including bibliographical items, abstract, scope of claim for patent and detailed description of the invention, tags indicating the beginning and end of drawings, and insertion points for image data and foreign words. Information that indicates the layout structure consists of tags indicating the page starting position, line breaks, text frame (a frame into which text code is inserted) and image frame (a frame into which image data is inserted). Additional tags include those for control purposes, such as superscripts, subscripts and underlining.

### **(2) Image Files**

MMR two-dimensional compression based on recommendation G4 of CCITT T. 6 (recommendation regarding compression of image data by the Comité Consultatif International Télégraphique et Téléphonique) is performed on image data. TIFF (Tag Image File Format) is employed for the file format of image data.

### **(3) Position Files**

These files specifically refer to the recording of the positions of major tags appearing in text files (byte offset from the beginning of the text file).

In addition to the three types of files described above, management files and key index files for retrieval of patent gazettes, as well as contents files used for displaying the table of contents are also made available to allow a diverse range of utilization. The Japan Patent Office prepared a list of specifications containing information on the file structure and other aspects of CD-ROM unexamined patent gazettes as described above. Those specifications were disclosed to the general public in December 1991.



## Appendix

### 1. State of Globalization

The Japan Database Industry Association (DINA) has been conducting a series of survey of its members and other Japanese database services in order to establish the availability of Japanese database services in the overseas market, as well as to find out the problems encountered by those who are expanding their services abroad. This report is the results of its seventh survey conducted in July, 1993, sponsored by the Database Promotion Center, Japan (DPC). The questionnaire was distributed to a total of 200 database service companies including DINA members and DPC supporting members, and 136 valid responses were delivered (68.0% response ratio) by July 31, 1993.

Of the organizations which responded, currently 42 are offering database services abroad, while 13 are planning such services.

The results show that a total of 306 databases developed in Japan are accessible from overseas users. As shown on Table 1, the number has been increasing steadily for last six years, and the number in 1993 is increased 5% compared to the previous year.

**Table 1 Number of Japanese Databases Accessible from Overseas**

| Survey Date         | Feb. '87 | July '88 | July '89 | July '90 | July '91 | July '92 | July '93 |
|---------------------|----------|----------|----------|----------|----------|----------|----------|
| Number of Databases | 28       | 83       | 104      | 155      | 226      | 290      | 306      |

Of the 306 databases accessible from overseas in July, 1993, 33 (10.8%) are in the fields of "science/technology", 119 (38.9%) are of "Economics/Business/Finance", 144 (47.1%) are of "General", 8 (2.6%) are of "Economics/Business/Finance" plus "General", one (0.3%) is of "Science/Technology" plus "Economics/Business/Finance", and one (0.3%) is of "all these fields".

Concerning the language distribution of the 306 databases, it was found that 205 (67.0%) are in Japanese, 54 (17.7%) are in English, 46 (15.0%) are in both Japanese and English, and one (0.3%) is in both English and other languages.

Distribution formats of the 306 databases are also examined. It was demonstrated that 232 (75.8%) are "Online", 28 (9.2%) are both in "Online" and "Magnetic Tape", 22 (7.2%) are in "Magnetic Tape", 13 (4.2%) are in "Online", "Magnetic Tape" and "CD-ROM/CD-I", 6 (2.0%)

---

are both in "Online" and "CD-ROM/CD-I", and 5 (1.6%) are in "CD-ROM/CD-I".

Concerning the share of overseas sales among the total database sales of each 38 institutions offering overseas services who responded to this question, 28 (73.7%) are 5% or less, 4 (10.6%) are between 5 and 10% , 3 (7.9%) are between 11 and 20%, one (2.6%) is between 21 and 30%, one (2.6%) is between 31 and 50% , and one (2.6%) is more than 51% . It was found that most of the institutions who earn more than 11% of the total sales of their databases from overseas develop English language databases based on the overseas users' needs, offering them online through well-known international vendors. The one institution who earns more than 51% of its total sales from overseas is the Japanese subsidiary of a large database producer whose headquarter is located overseas.

Table 2 and 3 are the lists of Japanese databases accessible from overseas, where Table 2 lists databases reported from producers and Table 3 shows those reported from distributors or vendors. It may be found from browsing the tables, there are several overlaps between the two tables and within the Table 3. The overlaps reflect the cases that more than one company took part in development and distribution of a database, and that several databases are distributed through more than two distributors/vendors.

Table 4 is a summary of Japanese databases being planned for overseas expansion as of July 31, 1993.

Table 5 lists the address and contacts for those institutions found in Table 2 or Table 3.

**Table 2 Japanese Databases Accessible Overseas (1993:Producers)**

Subject ①:Science and Technology Language J:Japanese Vendor Status P:Producer  
 ②:Economics, Business E:English D:Distributor  
 and Finance O:Others A:Agent  
 ③:General or Others T:Telecommunications  
 Format O:Online  
 M:Magnetic Tape  
 /Floppy Disk  
 C:CD-ROM/CD-I  
 F:Facsimile

| Company                                         | Database                         | Description                                                                                                                  | Subject | Language | Status | Format | Main Countries          |
|-------------------------------------------------|----------------------------------|------------------------------------------------------------------------------------------------------------------------------|---------|----------|--------|--------|-------------------------|
| A.C. Nielsen Company of Japan, Ltd. (ACN-Japan) | RETAIL INDEX                     | Sales trends information of foods, daily necessities, drugs, and cosmetics, based of over the counter auditing               | ①       | E        | P      | M      | U.S.A.                  |
|                                                 | SCANDRUG                         | Sales trends information of foods, daily necessities, drugs, and cosmetics, based on the POS (Point of Sales) data           | ①       | E        | P      | M      |                         |
| ADVANSIS                                        | ACSIS                            | Online daily POS database of home electric appliances and durable consumers' goods obtained from Japanese 1,100 Shops        | ②       | J        | P/D    | O/M    | U.S.A., Germany, France |
|                                                 | ACSIS-E                          | Bi-monthly POS data of home electric appliances obtained from Japanese mass sales shops                                      | ②       | E        | P/D    | M      | Netherlands             |
|                                                 | INTELECT                         | Sales information of home electric appliances and durable consumers' good obtained from 6,000 shops in U.S.A.                | ②       | E        | P/D    | M      | U.S.A., Germany, France |
| ASAHI SHIMBUN                                   | AERA Articles                    | Articles of AERA Weekly Journal                                                                                              | ③       | J        | P      | O      | U.S.A., Europe, Asia    |
|                                                 | Asahi News Service (ANS)         | Selected articles in English from Asahi Shimbun and Asahi Evening News                                                       | ③       | E        | P      | O      |                         |
|                                                 | HIASK                            | Articles of Asahi Shimbun                                                                                                    | ③       | J        | P      | O/M/C  |                         |
| C. Industrial Research Institute                | Computer Industry Index          | Directory of 20,000 companies and institutions in 14 areas related to computer industry, provided with 5 to 10 data elements | ②       | J        | P/D    | M      | U.S.A.                  |
|                                                 | Japan Software Company Directory | Description of Japanese information processing and software development companies, provided with 30 data elements            | ②       | J/E      | P/D    | M      |                         |
| COMLINE Business Data, Inc.                     | COMLINE Business Analysis        | Analytical articles on Japan's technology development and industry trends since June, 1986. Update weekly                    | ①       | E        | P/D    | O/M/C  | U.S.A., Europe          |
|                                                 | COMLINE Industrial Monitor       | News on Japan's industry, technology, and marketing strategies since June, 1986. Update daily                                | ②       | E        | P/D    | O/M/C  |                         |
|                                                 | Tokyo Financial Wire             | Financial, economic, and corporate news of Japan since June, 1986. Update daily                                              | ②       | E        | P/D    | O/M/C  |                         |

| Company                                                            | Database                                                                     | Description                                                                                                                                                                                                                    | Subject | Language | Status | Format | Main Countries                                     |
|--------------------------------------------------------------------|------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------|--------|--------|----------------------------------------------------|
| DAISO MEDIA SERVICE (DMS)                                          | AV/MARC                                                                      | Machine readable catalog (MARC) database for libraries                                                                                                                                                                         | ③       | J/E      | P/D    | O/M    |                                                    |
| Database Promotion Center, Japan (DPC)                             | ELECTRONIC VERSION OF THE DATABASE DIRECTORY                                 | Descriptive information (name, subject area, description, etc.) of commercial databases accessible in Japan                                                                                                                    | ③       | J        | P      | M      |                                                    |
| Dataquest Japan, Ltd. (DQJ)                                        | DQ MONDAY                                                                    | Price and market trends for semiconductors in the World                                                                                                                                                                        | ②       | E        | P/D    | O      | U.S.A.                                             |
| Dun & Bradstreet Business Information Services, Japan K.K. (D & B) | DUNSPRINT                                                                    | Credit information of Japanese companies including financial, historical, and other descriptive data                                                                                                                           | ②       | E        | P/D    | O/M    | Worldwide                                          |
| ELECTRONIC LIBRARY Inc. (EL)                                       | ELNET                                                                        | Citation of articles, with full-text image data, of 43 Japanese major newspapers and 145 Japanese journals, including monthly economic reports.                                                                                | ③       | J        | P/D    | O      | U.S.A., Europe, China, Southeast Asia, Others      |
| Institute for Financial Affairs, Inc. (IFFAI)                      | Tento Hyoji Kinri (Over the Counter Interest Rates)                          | Over the counter interest rates of large fixed deposit and super fixed deposit of every Monday, obtained from 200 financial institutions in Japan, including all the banks, 30 large credit unions, and 20 credit associations | ②       | J        | P      | M      | U.S.A.                                             |
|                                                                    | Zenkoku Ginko no Shisan/Yokin (Current Assets and Deposits of All the Banks) | Figures of deposits and assets of all the Japanese banks at the end of fiscal year (May 31st)                                                                                                                                  | ②       | J        | P      | M      |                                                    |
| Japan Association for International Chemical Information (JAICI)   | CHEM-J DATABASE                                                              | Bibliographic citation of chemical literature published by Japanese chemical societies                                                                                                                                         | ①       | J/E      | P/D    | M      | U.S.A., Germany                                    |
|                                                                    | NQRS DATABASE                                                                | Numerical data of Nuclear Quatropole Resonance Spectrum (NQRS)                                                                                                                                                                 | ①       | E        | P/D    | M      |                                                    |
| Japan Audit Bureau of Circulations (JABC)                          | ABC Data Online Service                                                      | Circulation data of Japanese newspapers and journals                                                                                                                                                                           | ②       | E        | P/D    | M      | U.S.A., Canada                                     |
| Japan Patent Information Organization (JPIO)                       | Design                                                                       | Bibliographic information of registered design in Japan since 1965                                                                                                                                                             | ①       | J        | P/D    | O      | Korea, Taiwan, Germany, France, U.S.A., and others |
|                                                                    | Japan Patent                                                                 | Bibliographic information with some abstracts and drawings of published or public patents in Japan since 1955                                                                                                                  | ①       | J        | P/D    | O      |                                                    |
|                                                                    | Published Patent English Abstracts Data                                      | Bibliographic information with abstracts of published patents in Japan                                                                                                                                                         | ①       | E        | P      | O      | U.S.A., France                                     |
|                                                                    | Trademark                                                                    | Bibliographic information with graphic figures of published, public, or applied trademarks in Japan since 1964                                                                                                                 | ①       | J        | P/D    | O      | Korea, Taiwan, Germany, France, U.S.A., and others |

| Company                                         | Database                             | Description                                                                                                                                                            | Subject | Language | Status | Format | Main Countries                                     |
|-------------------------------------------------|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------|--------|--------|----------------------------------------------------|
| Japan Patent Information Organization (JPIO)    | Utility Model                        | Bibliographic information with some abstracts and drawings of published or public utility models in Japan since 1960                                                   | ①       | J        | P/D    | O      | Korea, Taiwan, Germany, France, U.S.A., and others |
| Japan Pharmaceutical Information Center (JAPIC) | JAPIC-DOC                            | Bibliographic information on medicine and pharmaceuticals                                                                                                              | ①       | J        | P      | O      |                                                    |
| Keizai Bunken Kenkyukai                         | JOINT (Journal of Industrial Titles) | Bibliographic information of magazine articles on economic and industry                                                                                                | ②       | J        | P      | O      | U.S.A., Europe, Singapore, and others              |
| Kyodo News Service                              | KWS (Kyodo News Service)             | Japanese nation-wide news articles and overseas correspondents' reports, including sports news and news from Asia                                                      | ③       | E        | P/D    | O      | U.S.A., Europe                                     |
| Media Research Center Inc. (MRC)                | JPP                                  | Electronic version of 'Japan's Periodicals in Print', listing bibliographic data with 20 elements of 20,000 periodicals published in Japan, updated three times a year | ③       | J        | P/D    | O/M    |                                                    |
|                                                 | MEDIX                                | Electronic version of monthly 'Media Data', listing advertisement price of 3,000 Japanese popular journals, updated quarterly.                                         | ②       | J        | P/D    | O/M    |                                                    |
| NANSEI Research & Institute, Inc.               | FISHERY INDEX                        | Bibliographic citation of 50,000 research articles in the fields of marine and fisheries, including research papers, study reports, and periodical publications        | ①       | J        | P/D    | M      |                                                    |
| NHK JOHO NETWORK INC. (EL)                      | JAPAN BUSINESS TODAY                 | Japanese business related news texts and various data on Japanese major companies                                                                                      | ②       | E        | P      | C      | U.S.A.                                             |
| National Diet Library (NDL)                     | JAPAN/MARC                           | Machine readable catalog of books and periodicals published in Japan                                                                                                   | ③       | J        | P      | M      | U.S.A., Canada                                     |
|                                                 | JAPAN/MARC in CD-ROM                 | Machine readable catalog of books published in Japan offered in CD-ROM                                                                                                 | ③       | J        | P      | C      |                                                    |
| New Glass Forum (NGF)                           | INTERGLAD                            | Information on the relation between formations and properties of glass                                                                                                 | ①       | E        | P      | C      | U.S.A., Europe                                     |
| Nichigai Associates, Inc.                       | BOOK                                 | Contents information of books published after 1986 in Japan                                                                                                            | ③       | J        | P/D    | O/C    |                                                    |
|                                                 | BOOK/MONTHLY                         | Monthly version of 'BOOK' database (contents information of books published in Japan)                                                                                  | ③       | J        | P/D    | O      |                                                    |
|                                                 | MAGAZINE                             | Index to articles, since 1981, of 1,300 business and economic journals                                                                                                 | ③       | J        | P/D    | O/C    |                                                    |

| Company                             | Database                                 | Description                                                                                                                                                                                                                     | Subject | Language | Status | Format | Main Countries                                                                         |
|-------------------------------------|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------|--------|--------|----------------------------------------------------------------------------------------|
| Nichigai Associates, Inc.           | PRIZE                                    | Information on 2,000 Japanese prizes in various areas, with prize-winners' data                                                                                                                                                 | ③       | J        | P/D    | O      |                                                                                        |
|                                     | WHO                                      | Biographical information of 330,000 writers in Japan, with bibliographic information of their publications                                                                                                                      | ③       | J        | P/D    | O/C    |                                                                                        |
| Nihon Keizai Shimbun, Inc. (NIKKEI) | China Economic Databank                  | Major economic statistics data from mainland China                                                                                                                                                                              | ②       | J/E      | P/D    | O      | U.S.A., U.K., Germany, France, Switzerland, Italy, Canada, Hong Kong, Singapore, Korea |
|                                     | Commodity Market Data                    | Price data and demand/supply data of major commodity market conditions (daily, weekly, and monthly)                                                                                                                             | ②       | J/E      | P/D    | O/M    |                                                                                        |
|                                     | Consumer Radar                           | Originally obtained data on the attitudes and reality of consumer behavior toward financial issues                                                                                                                              | ②       | J        | P/D    | O/M/C  |                                                                                        |
|                                     | Consumer Statistics Data                 | Consumer price data from the General Affairs Agency                                                                                                                                                                             | ②       | J/E      | P/D    | O      |                                                                                        |
|                                     | Corporate Action Related Data            | Data related to new stock issuing such as patterns of fund raising, increase and decrease of capital, stock split, and other information on fund raising for listed companies                                                   | ②       | J/E      | P/D    | O/M    |                                                                                        |
|                                     | Corporate Profile                        | Description of Japanese major companies. Data elements such as name of CEOs, address, telephone number, year established, outline of business, major stock holders, summarized financial data, sales by component, are included | ②       | J/E      | P/D    | O/M/C  |                                                                                        |
|                                     | Daily Exchange Rate & Interest Rate Data | Daily data of foreign and domestic exchanges                                                                                                                                                                                    | ②       | J/E      | P/D    | O      |                                                                                        |
|                                     | Earning Estimate for Listed Companies    | Estimated and actual data of balance of settlements of accounts at the end of fiscal year, interim closing, and consolidated financial statements for listed companies                                                          | ②       | J/E      | P/D    | O/M    |                                                                                        |
|                                     | Economic Data by Size                    | Economic statistical data by size of small-to-medium sized companies based on data from the Small and Medium Enterprises Agency and the Smaller Business Finance Corporation                                                    | ②       | J/E      | P/D    | O/M    |                                                                                        |
|                                     | Energy Data                              | Demand/supply data and cost data on petroleum, coal, electric, gas, and nuclear power, as well as general economic statistical data                                                                                             | ②       | J/E      | P/D    | O/M    |                                                                                        |

| Company                                | Database                                    | Description                                                                                                                                                                                                                 | Subject | Language | Status | Format | Main Countries                                                                         |
|----------------------------------------|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------|--------|--------|----------------------------------------------------------------------------------------|
| Nihon Keizai Shimbun, Inc.<br>(NIKKEI) | Financial Statement for Banks               | Balance of settlements of accounts for banks since 1974                                                                                                                                                                     | ②       | J/E      | P/D    | O/M/C  | U.S.A., U.K., Germany, France, Switzerland, Italy, Canada, Hong Kong, Singapore, Korea |
|                                        | Financial Statement for Insurance Companies | Balance of settlements of accounts for non-life insurance companies submitted to the Ministry of Finance since 1983                                                                                                         | ②       | J/E      | P/D    | O/M/C  |                                                                                        |
|                                        | Financial Statement for Listed Companies    | Balance of settlements of accounts at the end of fiscal year, interim closing, and consolidated financial statements, since 1964, for listed companies other than banks, securities houses, and insurance companies         | ②       | J/E      | P/D    | O/M/C  |                                                                                        |
|                                        | Financial Statement for Security Houses     | Balance of settlements of accounts for security houses submitted to the Ministry of Finance                                                                                                                                 | ②       | J/E      | P/D    | O/M/C  |                                                                                        |
|                                        | Flash Financial Report for Listed Companies | Balance of settlements of accounts at the end of fiscal year, interim closing, and consolidated financial statements for listed companies other than banks, security houses, and insurance companies, as disclosed          | ②       | J/E      | P/D    | O/M    |                                                                                        |
|                                        | Futures Data                                | Trading and price data of forward buying stock and bond                                                                                                                                                                     | ②       | J/E      | P/D    | O/M    |                                                                                        |
|                                        | Industrial Data                             | Statistical data on various industry obtained from MITI and industrial associations                                                                                                                                         | ②       | J/E      | P/D    | O      |                                                                                        |
|                                        | International Trade Statistics              | International trade statistics by commodity and country based on the Ministry of Finance data                                                                                                                               | ②       | J/E      | P/D    | O      |                                                                                        |
|                                        | Major Market Indices Data                   | Nikkei stock price average data, stock price average data for Nikkei 500 major stocks, volume of margin transactions for three exchanges, and others                                                                        | ②       | J/E      | P/D    | O/M    |                                                                                        |
|                                        | News Flash                                  | Real-time daily news from all over the World, categorized by subject                                                                                                                                                        | ③       | J/E      | P/D    | O      |                                                                                        |
|                                        | Newspapers and Magazine for Text Search     | Articles from news papers including four Nikkei publications and several magazines published by Nikkei BP                                                                                                                   | ③       | J/E      | P/D    | O      |                                                                                        |
|                                        | Nikkei Macro Economics Statistics           | Major national statistics of Japanese economy including statistics of earnings, production, corporate management, finance, international trade, international balance of payments, labor, commodity prices, and consumption | ②       | J/E      | P/D    | O/M    |                                                                                        |

| Company                                | Database                                     | Description                                                                                                                                                                                                                   | Subject | Language | Status | Format | Main Countries                                                                         |
|----------------------------------------|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------|--------|--------|----------------------------------------------------------------------------------------|
| Nihon Keizai Shimbun, Inc.<br>(NIKKEI) | Nikkei Macro Model                           | Metrical model for quarter analysis intended to provide short term analysis and structural analysis                                                                                                                           | ②       | J/E      | P/D    | O      | U.S.A., U.K., Germany, France, Switzerland, Italy, Canada, Hong Kong, Singapore, Korea |
|                                        | Nikkei Monetary Databank                     | Major economic statistical data including money supply, interest rates, capital circulation, and other general financial statistics                                                                                           | ②       | J/E      | P/D    | O/M    |                                                                                        |
|                                        | Option Data                                  | Trading and price data, volume, and positions of options and stock price index options                                                                                                                                        | ②       | J/E      | P/D    | O/M    |                                                                                        |
|                                        | POS Data                                     | POS data of 500,000 items including foods, household appliances, and other obtained from 150 stores                                                                                                                           | ②       | J        |        | O/M    |                                                                                        |
|                                        | Personnel Data Bank                          | Personnel data of executives of major companies and managing staff of government employees. Data elements such as name, title, place of employment, home address, birth date, educational history, graduate data are included | ②       | J        | P/D    | O/M    |                                                                                        |
|                                        | Portfolio Related Data Service               | Various indices on risks and returns in Japanese and US stock market investment with portfolio evaluation and optimization system                                                                                             | ②       | J/E      | P/D    | O/M    |                                                                                        |
|                                        | Regional Databank                            | Regional data including area, population, housing, land price, number of establishments by industry, and shipments for 3,400 cities, towns, and villages                                                                      | ②       | J/E      | P/D    | O      |                                                                                        |
|                                        | Regional Economic and Financial File         | Regional market data including industry, finance, local public finance, consumption, commodity price, labour, and commerce for the metropolises and districts                                                                 | ②       | J/E      | P/D    | O      |                                                                                        |
|                                        | Regional Input Output Table                  | Input output tables within and between regions provided by MITI                                                                                                                                                               | ②       | J/E      | P/D    | O      |                                                                                        |
|                                        | Short-Term Model for Seven Advanced Nations  | Quarterly metrical model for Japan, USA, UK, France, Germany, Italy and Canada, intended to provide short-term forecasts                                                                                                      | ②       | J/E      | P/D    | O      |                                                                                        |
|                                        | Statistical Data of Wholesale Consumer Price | Wholesale price indices, import price indices, and input-output indices from the Bank of Japan                                                                                                                                | ②       | J/E      | P/D    | O/M    |                                                                                        |
|                                        | Statistics of Incorporated Enterprises       | Statistics of incorporated enterprises based on the Ministry of Finance data                                                                                                                                                  | ②       | J/E      | P/D    | O/M    |                                                                                        |

| Company                                   | Database                                         | Description                                                                                                                      | Subject | Language | Status | Format | Main Countries                                                                         |
|-------------------------------------------|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|---------|----------|--------|--------|----------------------------------------------------------------------------------------|
| Nihon Keizai Shimbun, Inc. (NIKKEI)       | Statistics on Construction                       | Statistics on orders received, starting works, cost of construction, and other construction related statistical data             | ②       | J/E      | P/D    | O      | U.S.A., U.K., Germany, France, Switzerland, Italy, Canada, Hong Kong, Singapore, Korea |
|                                           | Statistics on Products, shipments, and Inventory | Statistics on products, shipments, and inventory based on MITI's data                                                            | ②       | J/E      | P/D    | O/M    |                                                                                        |
|                                           | Stock Bond Data                                  | Stock data of listed companies and over-the-counter trading in national stock market and bond data for Tokyo and Osaka Exchanges | ②       | J/E      | P/D    | O/M    |                                                                                        |
|                                           | Technical Indices for industries and Each Issue  | Basic indices and indices by industry as well as value added indices data on Tokyo and Osaka Exchanges                           | ②       | J/E      | P/D    | O/M    |                                                                                        |
|                                           | Unlisted Companies' Marketing Reports            | Marketing report information submitted to the Ministry of Finance by unlisted major companies since 1974                         | ②       | J/E      | P/D    | O/M    |                                                                                        |
|                                           | Unlisted Companies' Financial Statements         | Financial report information submitted to the Ministry of Finance by unlisted major companies since 1977                         | ②       | J/E      | P/D    | O/M/C  |                                                                                        |
|                                           | World Economic Long-Term Model                   | Annual metrical model for long-term forecasts of the World 8 regions. Original simulation is available                           | ②       | J/E      | P/D    | O      |                                                                                        |
| Nomura Research Institute Co., Ltd. (NRI) | Jisseki Zaimu (Financial Results)                | Basic elements including P/L and B/S, as well as additional elements for financial analysis                                      | ②       | J        | P      | O/M    | U.S.A.                                                                                 |
|                                           | Kaisha Zokusei (Company Attributes)              | Brand codes, company name, and other company attribute data                                                                      | ②       | J        | E      | O/M    |                                                                                        |
|                                           | NRI/E                                            | Numerical and textual data on Japanese economy, finance, and industry                                                            | ②       | E        | P      | O      | U.S.A., Germany, France                                                                |
|                                           | Shihon Ido (Mobility of Capital)                 | Adjusting coefficients and number of stock issued                                                                                | ②       | J        | P      | O/M    | U.S.A.                                                                                 |
| TEIKOKU DATABANK, LTD. (TDB)              | COSMOS 2 IN ENGLISH                              | Descriptive information of 190,000 Japanese leading companies, including those with English trade names                          | ②       | E        | P      | O      | U.S.A.                                                                                 |
| THE YOMIURI SHIMBUN                       | THE DAILY YOMIURI DATABASE                       | Electronic version of 'The Daily Yomiuri' a Newspaper written in English                                                         | ③       | E        | P      | O      | U.S.A., Europe                                                                         |
|                                           | YOMIDAS                                          | Collection of articles from Yomiuri Shimbun including Tokyo, Osaka, Western, and Central versions                                | ③       | J        | P      | O      | U.S.A., U.K.                                                                           |
|                                           | YOMIURI REPORT FROM JAPAN                        | Collection of domestic business news articles written in English                                                                 | ③       | E        | P      | O      | U.S.A., Europe                                                                         |

| Company                                                               | Database                                                       | Description                                                                                                                                                                                                                                         | Subject | Language | Status | Format | Main Countries                   |
|-----------------------------------------------------------------------|----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------|--------|--------|----------------------------------|
| TOYO KEIZAI INC.                                                      | (GYOSEKI YOSO DATA) BUSINESS FORECAST DATA                     | Financial forecasts data of 2,500 Japanese listed and over-the-counter traded companies, corresponding to 'Japan Company Handbook'                                                                                                                  | ②       | E        | P      | M      |                                  |
|                                                                       | (KIGYO ZAIMU DATA) CORPORATE FINANCE DATA                      | Closing account data of 2,500 Japanese listed and over-the-counter traded companies                                                                                                                                                                 | ②       | E        | P      | M      |                                  |
| Technomics, Inc.                                                      | ACTFUND                                                        | Information on antibiotic substances                                                                                                                                                                                                                | ①       | E        | D      | M      | U.S.A., Europe                   |
|                                                                       | Pharmcast                                                      | Information on medicines and pharmaceuticals                                                                                                                                                                                                        | ①       | E        | P/D    | O/M    |                                  |
|                                                                       | Pharmcast Data                                                 | Information on medicines and pharmaceuticals, provided with structural formula data                                                                                                                                                                 | ①       | E        | P/D    | M      |                                  |
| The Japan Information Center of Science and Technology (JICST) / JOIS | JICST File on Current Science and Technology Research in Japan | Description of research projects planned or ongoing in Japanese public research institutions, based on questionnaires                                                                                                                               | ①       | J        | P/D    | O      | U.S.A., U.K., Germany, Korea     |
|                                                                       | JICST File on Medical Science in Japan                         | Bibliographic information, with abstracts, of articles in the fields of health science published in Japan, compiled from 'Igaku Chuo Zasshi' (abstract journal of medicine published since 1903) and JICST Domestic Medical File offered since 1981 | ①       | J        | P/D    | O      |                                  |
|                                                                       | JICST File on Science and Technology                           | Bibliographic information, with abstracts, of 670,000 articles in the fields of science and technology, collected from scholarly journals, proceedings, technical notes, public literature, and others in 50 countries                              | ①       | J        | P/D    | O      |                                  |
|                                                                       | JICST File on Science, Technology, and Medicine in Japan       | Bibliographic information, with abstracts, of literature in the fields of science, technology, and medicine in JICST File on Science and Technology and JICST File on Medical Science, translated into English                                      | ①       | E        | P/D    | O      |                                  |
|                                                                       | JICST Holding List File                                        | Machine readable catalog of JICST library collections                                                                                                                                                                                               | ③       | J        | P/D    | O      |                                  |
| The Japan Information Center of Science and Technology (JICST) / STN  | JGRIP                                                          | Description of research projects planned or ongoing in Japanese public research institutions                                                                                                                                                        | ①       | E        | P/D    | O      | U.S.A., Europe, U.K., and others |
|                                                                       | JICST-E                                                        | Bibliographic information, partially with abstracts, of Japanese literature in the fields of science, technology, and medicine, translated into English                                                                                             | ①       | E        | P/D    | O      |                                  |

**Table 3 Japanese Databases Accessible Overseas (1993: Distributors)**

Subject ①: Science and Technology Language J: Japanese Vendor Status P: Producer Format O: Online  
 ②: Economics, Business and Finance E: English D: Distributor M: Magnetic Tape  
 ③: General or Others O: Others A: Agent /Floppy Disk  
 T: Telecommunications C: CD-ROM/CD-I  
 F: Facsimile

| Company Name                   | Database Name                                   | Description of Database                                                                                                                                                                                                                                    | Subject | Language | Status | Format | Main Countries                                     |
|--------------------------------|-------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------|--------|--------|----------------------------------------------------|
| Asia Data Research, Inc. (ADR) | ADR Market Trends Search                        | Retail panel data of home-electric appliances and photo cameras in Asian countries                                                                                                                                                                         | ②       | J/E      | A      | M      | Hong Kong, China, Indonesia, Singapore, and others |
|                                | GfK RETAIL PANEL                                | Retail panel data of home-electric appliances and photo cameras in European countries                                                                                                                                                                      | ②       | J/E      | A      | M      | Europe                                             |
| COMLINE Business Data Inc.     | Opportunities for Suppliers in the Japan Market | Full text information on government agency tender opportunities to companies overseas, taken directly from 'Kampo', the official daily newspaper of Japanese government                                                                                    | ②       | E        | D      | O      |                                                    |
|                                | COMLINE Corporate Data                          | Information on Japanese chemical, bio-technology, and pharmaceutical companies, including 2,500 listed companies and 2,500 unlisted companies                                                                                                              | ②       | E        | D      | O      |                                                    |
|                                | Japan M & A Reporter, M & A Japan               | In-depth reports on M&A and Joint-Venture activities from 'Japan M&A Reporter' and 'M&A Japan' published by ULMER BROTHERS Research Institute (UBRI), a subsidiary of ULMER BROTHERS, INC. specializing in M&A transactions between Japan, USA, and Europe | ②       | E        | D      | O      |                                                    |
| DENTSU, INC.                   | EL DB                                           | Collection of fulltext articles from 43 newspapers and 120 journals                                                                                                                                                                                        | ③       | J        | A      | O/C/F  | U.S.A., Hong Kong, France                          |
|                                | EL MOR                                          | Automatic clipping service of fulltext articles of 25 newspapers added to the system in the morning of the day                                                                                                                                             | ③       | J        | A      | C/F    |                                                    |
|                                | EL SDI                                          | Clipping service of fulltext newspaper and journal articles added to the database on the previous day                                                                                                                                                      | ③       | J        | A      | C/F    |                                                    |
| G. Search Corporation          | AERA Database                                   | Collection of all articles from weekly magazine 'AERA'                                                                                                                                                                                                     | ③       | J        | D      | O      | Worldwide                                          |
|                                | ASAHI ONLINE DATABASE                           | Collection of articles in English from 'Asahi Evening News' and English version of 'Asahi News Services'                                                                                                                                                   | ③       | E        | D      | O      |                                                    |
|                                | Asahi Shimbun Database                          | Collection of articles from 'Asahi Shimbun'                                                                                                                                                                                                                | ③       | J        | D      | O      |                                                    |

| Company Name          | Database Name                                                        | Description of Database                                                                                                                                 | Subject | Language | Status | Format | Main Countries |
|-----------------------|----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------|--------|--------|----------------|
| G. Search Corporation | Asahi Shimbun Evening Online                                         | News-flash of 'Asahi Shimbun Evening Version', including articles from first, second, and social pages                                                  | ③       | J        | D      | O      | Worldwide      |
|                       | Asia Business Information                                            | Micro-business information of Asian countries                                                                                                           | ②       | J        | D      | O      |                |
|                       | BOOK                                                                 | Information on the contents of books published in Japan                                                                                                 | ③       | J        | D      | O      |                |
|                       | BOOK/MONTHLY                                                         | Monthly version of new information from 'BOOK' database                                                                                                 | ③       | J        | D      | O      |                |
|                       | Best Ten Toys of the Week                                            | Sales data of Toys in one week                                                                                                                          | ③       | J        | D      | O      |                |
|                       | CD New Score Information                                             | Information on newly published and forth-coming CD                                                                                                      | ③       | J        | D      | O      |                |
|                       | Catalog of Journals and Newspapers                                   | Catalog of domestic journals, newspapers, and newsletters with their circulation, price, description and codes                                          | ③       | J        | D      | O      |                |
|                       | Ciabase                                                              | Detailed description of 8,000 major companies in 47 countries Worldwide                                                                                 | ②       | J/E      | D      | O      |                |
|                       | Cross-File Retrieval of Newspapers                                   | Cross-file retrieval system for 'Asahi Shimbun', 'Mainichi Shimbun', and 'Yomiuri Shimbun'                                                              | ③       | J        | D      | O      |                |
|                       | Database Directory                                                   | Description of databases available in Japan                                                                                                             | ③       | J        | D      | O      |                |
|                       | ECONOMIST                                                            | Electronic version of 'Economist' journal, full-text                                                                                                    | ③       | J        | D      | O      |                |
|                       | EP-Sensor: Medium and Long Term Historical Data                      | Medium and long-term historical data, segmented in monthly, quarterly, and yearly, on Socio-Economic Trends based on the announcement of the Government | ②       | J        | D      | O      |                |
|                       | EP-Sensor: Sector Flash                                              | Medium and long-term historical data on Socio-Economic Trends, 'EP-SENSOR', covering current two terms                                                  | ②       | J        | D      | O      |                |
|                       | Gendai Yogo no Kiso Chishiki (Basic Knowledge of Modern Terminology) | Electronic version of the 'Gendai Yogo no Kiso Chishiki (Basic Knowledge of Modern Terminology)' published by Jiyu Kokuminsha                           | ③       | J        | D      | O      |                |
|                       | INTELLECT                                                            | Judicial precedent and related information on intellectual property lawsuits                                                                            | ②       | J        | D      | O      |                |
|                       | Industrial News                                                      | News-release from companies, government bodies, and related organizations                                                                               | ②       | J        | D      | O      |                |

| Company Name          | Database Name                                 | Description of Database                                                                                                      | Subject | Language | Status | Format | Main Countries |
|-----------------------|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|---------|----------|--------|--------|----------------|
| G. Search Corporation | Industrial and Technical Information on China | Major articles related to industry and technology from Chinese domestic newspapers                                           | ②       | J        | D      | O      | Worldwide      |
|                       | Information Industry Hotline                  | Flash information of 'The Daily Network News'                                                                                | ③       | J        | D      | O      |                |
|                       | JETRO ACE                                     | Collection of reports and statistics from 80 overseas points of JETRO                                                        | ②       | J        | D      | O      |                |
|                       | JETRO-WINDS                                   | Information for promotion of trade, gathered by JETRO                                                                        | ②       | J        | D      | O      |                |
|                       | JTB Hotel Information                         | Directory of domestic hotels and lodges                                                                                      | ③       | J        | D      | O      |                |
|                       | Laser-Disk Information                        | Laser-disk information published in 'CD-Journal'                                                                             | ③       | J        | D      | O      |                |
|                       | MAGAZINE                                      | Articles from 1,300 magazine published in Japan                                                                              | ③       | J        | D      | O      |                |
|                       | MAINICHI DAILY NEWS                           | Collection of English language articles from 'Mainichi Daily News'                                                           | ③       | E        | D      | O      |                |
|                       | Mainichi Shimbun Database                     | Collection of major articles from the 'Mainichi Shimbun'                                                                     | ③       | J        | D      | O      |                |
|                       | Manual of Company Events and Festivals        | Instructional manual on how to proceed company events and festivals                                                          | ③       | J        | D      | O      |                |
|                       | Market Search Reference Directory             | Reference to the marketing research reports and articles                                                                     | ②       | J        | D      | O      |                |
|                       | Market Search on Company Trends               | Reference to the marketing research information on companies                                                                 | ②       | J        | D      | O      |                |
|                       | Market Search on Consumer Trends              | Reference to the marketing research information based on questionnaire to consumers                                          | ②       | J        | D      | O      |                |
|                       | Market Search on Products and Industries      | Reference to the marketing research information of all industries and their products in Japan                                | ②       | J        | D      | O      |                |
|                       | Medical and Pharmaceutical Database           | Pharmaceuticas information from the price standards for medicines based on the attached documents, with urgent news          | ①       | J        | D      | O      |                |
|                       | Music CD Catalog                              | Bibliographic and price information with critics for music CD                                                                | ③       | J        | D      | O      |                |
|                       | NEW BUSINESS INDUSTRY REPORT                  | Research reports of remarkable industries' trends and issues including description, structure, and profitability information | ②       | J        | D      | O      |                |

| Company Name                                                     | Database Name                                    | Description of Database                                                                            | Subject | Language | Status | Format | Main Countries                                     |
|------------------------------------------------------------------|--------------------------------------------------|----------------------------------------------------------------------------------------------------|---------|----------|--------|--------|----------------------------------------------------|
| G. Search Corporation                                            | NIKKAN SPORTS                                    | Collection of articles from 'Nikkan Sports' newspaper                                              | ③       | J        | D      | O      | Worldwide                                          |
|                                                                  | Nihon Kogyo Shimbun Database                     | Collection of articles from 'Nihon Kogyo Shimbun', except security market information              | ③       | J        | D      | O      |                                                    |
|                                                                  | Nihon Nogyo Shimbun Database                     | Collection of articles from 'Nihon Nogyo Shimbun', except security information                     | ③       | J        | D      | O      |                                                    |
|                                                                  | Nikkan Kogyo Shimbun Database                    | Collection of articles on new products and technology from Nikkan Kogyo Shimbun                    | ③       | J        | D      | O      |                                                    |
|                                                                  | PRIZE                                            | Information on prize-winners and prizes in Japan                                                   | ③       | J        | D      | O      |                                                    |
|                                                                  | Reference Guide to PC Journals                   | Collection of articles from 15 major PC journals                                                   | ③       | J        | D      | O      |                                                    |
|                                                                  | SEIKATSU-SHA Questionnaire Library               | Summarized version of 'SEIKATSU-SHA DATA' published by JMA Research Institute, Inc.                | ②       | J        | D      | O      |                                                    |
|                                                                  | TEIKOKU DATABANK: JAPANESE COMPANIES             | Business information of 50,000 Japanese companies with English trade name                          | ②       | J        | D      | O      |                                                    |
|                                                                  | Title Information of Weekly and Monthly Journals | Title information of 32 popular journals                                                           | ③       | J        | D      | O      |                                                    |
|                                                                  | Title Search                                     | Table of contents of industrial and technological magazines issued in Japan                        | ③       | J        | D      | O      |                                                    |
|                                                                  | Video & CD Flash                                 | Domestic on-sale information of video and CD                                                       | ③       | J        | D      | O      |                                                    |
|                                                                  | WHO                                              | Personnel information on those extracted from newspapers, magazines, and books published in Japan  | ③       | J        | D      | O      |                                                    |
|                                                                  | Yomiuri Shimbun Database                         | Collection of articles from 'Yomiuri Shimbun' and 'Yomiuri Katei Shimbun'                          | ③       | J        | D      | O      |                                                    |
| Information Service International-Dentsu Ltd. (IDI-Dentsu)       | JSD                                              | Real-time stock price information of Tokyo and Osaka Stock Exchanges, provided by Jiji Press, Ltd. | ②       | E        | D/T    | O      | U.K., U.S.A.                                       |
| Japan Association for International Chemical Information (JAICI) | QCLDB                                            | Bibliographic database of quantum chemistry with Worldwide coverage                                | ①       | E        | D/A    | M      | Worldwide                                          |
| Japan Patent Information Organization (JPIO)                     | IMPADOC                                          | Bibliographic information of patents published by 53 countries                                     | ①       | E/O      | D      | O      | Korea, Taiwan, Germany, France, U.S.A., and others |
| MARUZEN CO., LTD.                                                | J-BISC                                           | CD-ROM version of 'JAPAN/MARC', database of catalog of books published in Japan                    | ①/②/③   | J        | D      | C      | U.S.A., U.K., France, Canada, and others           |

| Company Name          | Database Name                   | Description of Database                                                                                           | Subject | Language | Status | Format | Main Countries |
|-----------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------|---------|----------|--------|--------|----------------|
| NEC Corporation (NEC) | C&C-VAN Database                | Information on companies, economy, and international trade                                                        | ②/③     | J        | D      | O      |                |
|                       | DIALINE PC VERSION              | Information on books published in Japan and others                                                                | ②/③     | J        | D      | O      |                |
|                       | NICHIGAI ASSIST                 | Information on biography, books, and journals                                                                     | ③       | J        | D      | O      |                |
|                       | NIKKEI TELECOM BIZ              | Articles from newspapers, company information, and other general textual information, with downloading capability | ②/③     | J        | D/A    | O      |                |
| NIFTY Corporation     | 'Economist' Database            | Retrospective collection of articles from 'Economist' journal                                                     | ②       | J        | D      | O      |                |
|                       | AERA Database                   | Collection of all articles from weekly magazine 'AERA' published by Asahi Shimbun                                 | ③       | J        | D      | O      |                |
|                       | Aged Care Information           | Topic and news on aging with corresponding public policy information                                              | ③       | J        | D      | O      |                |
|                       | Apple & Macintosh               | Information on Apple and Macintosh                                                                                | ③       | J        | D      | O      |                |
|                       | Asahi News Service              | English version of articles from Asahi Shimbun                                                                    | ③       | E        | D      | O      |                |
|                       | Asahi Shimbun Database          | Collection of almost all articles from Asahi Shimbun                                                              | ③       | J        | D      | O      |                |
|                       | Asahi Shimbun Newsflash         | Newsflash from Asahi Shimbun                                                                                      | ③       | J        | D      | O      |                |
|                       | Asia Newsflash                  | Business information on NIES, ASEAN, countries and China                                                          | ②/③     | J        | D      | O      |                |
|                       | Asian Business Information      | Micro-economic and business information of ASEAN and NIES countries                                               | ②       | J        | D      | O      |                |
|                       | Basic Knowledge on Modern Terms | Electronic version of the 'Basic Knowledge on Modern Terms' published by Jiyu Kokumin Sha                         | ③       | J        | D      | O      |                |
|                       | Best Ten Toys of the Week       | Best selling information of toys                                                                                  | ②       | J        | D      | O      |                |
|                       | Book Street                     | Information on new books, best-sellers and lectures                                                               | ③       | J        | D      | O      |                |
|                       | Book/Monthly                    | Monthly revision of new information from 'BOOK'                                                                   | ③       | J        | D      | O      |                |
|                       | Books on PC                     | Review of books related personal computers                                                                        | ③       | J        | D      | O      |                |
|                       | Business Information Guide      | Directory of business related organizations                                                                       | ③       | J        | D      | O      |                |
|                       | Business Letter Examples        | Collection of business letter examples                                                                            | ③       | J        | D      | O      |                |

| Company Name      | Database Name                                         | Description of Database                                                                             | Subject | Language | Status | Format | Main Countries |
|-------------------|-------------------------------------------------------|-----------------------------------------------------------------------------------------------------|---------|----------|--------|--------|----------------|
| NIFTY Corporation | Business and Market Trends                            | Information on macro economic trends                                                                | ②       | J        | D      | O      |                |
|                   | CD New Score Information                              | Information on newly published and forthcoming CD                                                   | ③       | J        | D      | O      |                |
|                   | COSMOS 2                                              | Financial and descriptive data on Japanese companies from Teikoku Databank                          | ②       | J        | D      | O      |                |
|                   | Ceremonial Precedents                                 | Ceremonial manners and precedents on marriage, funeral, and ancestral worship                       | ③       | J        | D      | O      |                |
|                   | Cfarbase                                              | Financial information of 8,000 major international companies                                        | ②       | J        | D      | O      |                |
|                   | Cfarbase                                              | Financial information of 8,000 major international companies, provided in English                   | ②       | E        | D      | O      |                |
|                   | Chunichi Shimbun Chubu Chihō News                     | Collection of local articles from Chunichi Shimbun Chubu (Central Japan) version                    | ③       | J        | D      | O      |                |
|                   | Chunichi Shimbun Headline News                        | Summary of news flash from Chunichi Shimbun                                                         | ③       | J        | D      | O      |                |
|                   | Chunichi Shimbun News Summary                         | Summary of selected articles from Chunichi Shimbun morning edition                                  | ③       | J        | D      | O      |                |
|                   | Chunichi Shimbun Tokai-Hokuriku Financial Information | Financial information of nine prefectures in Tokai-Hokuriku region from Chunichi Shimbun            | ②       | J        | D      | O      |                |
|                   | Currency Exchange in Practice                         | Collection of answers to questionnaires on foreign currency exchange                                | ②       | J        | D      | O      |                |
|                   | Current Index of PC Journals                          | Summary of articles from major PC journals                                                          | ③       | J        | D      | O      |                |
|                   | Current Index to Journal Articles                     | Index to current articles of newly published journals, categorized into various fields              | ③       | J        | D      | O      |                |
|                   | DIAMOND Company Personnel Directory                   | Electronic version of the 'Directory of Personnel in Japanese Companies' published by Diamond Press | ③       | J        | D      | O      |                |
|                   | Dataquest Industry Analysis of Information Systems    | Trends and analytical information of information systems industry                                   | ①       | J        | D      | O      |                |
|                   | Dial Q2 Program Reference                             | Description of programs offered from Dial Q2                                                        | ③       | J        | D      | O      |                |

| Company Name      | Database Name                                | Description of Database                                                                                                                                                                  | Subject | Language | Status | Format | Main Countries |
|-------------------|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------|--------|--------|----------------|
| NIFTY Corporation | Directory of Faximile Numbers                | Electronic version of 'Fax Directory' published by TOMOE                                                                                                                                 | ③       | J        | D      | O      |                |
|                   | Directory of Restaurants in Keihanshin Area  | Directory of gourmet restaurants in Kyoto, Ohsaka, and Kobe area                                                                                                                         | ③       | J        | D      | O      |                |
|                   | ECONOMIST                                    | Electronic version of 'Economist' journal published by Mainichi Shimbun                                                                                                                  | ②       | J        | D      | O      |                |
|                   | ELISNET Semi-conductor Information           | Technical information on semi-conductor parts and devices                                                                                                                                | ①       | J        | D      | O      |                |
|                   | Economic Policy Information of Government    | Information on reports from government agencies, the Bank of Japan, the Federation of Economic Organizations, Japan Committee for Economic Development, and the Liberal Democratic Party | ②       | J        | D      | O      |                |
|                   | Economic Trends Reports of Small Businesses  | Electronic version of 'Small Business Radar', published by the Association of Credit Unions                                                                                              | ②       | J        | D      | O      |                |
|                   | Educational News from Mainichi Shimbun       | Articles on education and entrance examinations from Mainichi Shimbun                                                                                                                    | ③       | J        | D      | O      |                |
|                   | Employment Information of Japanese Companies | Employment trends of companies in Japan                                                                                                                                                  | ②       | J        | D      | O      |                |
|                   | English Business Letter Examples             | Collection of business letter examples in English                                                                                                                                        | ③       | E        | D      | O      |                |
|                   | English Letters for Technical Fields         | Collection of examples of English letters and sentences for technical use                                                                                                                | ③       | E        | D      | O      |                |
|                   | English News Release                         | Collection of news release in English                                                                                                                                                    | ③       | E        | D      | O      |                |
|                   | FAIRS AND EVENTS                             | News flash on fairs and events held in Japan                                                                                                                                             | ③       | J        | D      | O      |                |
|                   | FM & OASYS SERIES                            | Information and training course guide for OASYS and FM-series of Fujitsu                                                                                                                 | ③       | J        | D      | O      |                |
|                   | Finding Books                                | New book information                                                                                                                                                                     | ③       | J        | D      | O      |                |
|                   | Fishing Information from Kansai              | Fishing information of western Japan from weekly 'Tsuru Sunday'                                                                                                                          | ③       | J        | D      | O      |                |
|                   | Flower Market Information                    | Price information of flowers at Tokyo Ohta Flower Market                                                                                                                                 | ②       | J        | D      | O      |                |
|                   | Guide to Excellent Eating Places in Tokyo    | Electronic version of 'Tokyo Excellent Eating Places'                                                                                                                                    | ③       | J        | D      | O      |                |

| Company Name      | Database Name                                                                 | Description of Database                                                                                  | Subject | Language | Status | Format | Main Countries |
|-------------------|-------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|---------|----------|--------|--------|----------------|
| NIFTY Corporation | Guide to Golf Membership Market                                               | Information on golf-club membership prices                                                               | ③       | J        | D      | O      |                |
|                   | Guide to High-tech Training Courses                                           | Information on training courses held by 'Kodo Gino Kaihatsu Center (High-technology Development Center)' | ③       | J        | D      | O      |                |
|                   | Guide to the Fuji-TV Programs                                                 | Description of programs broadcasted through Fuji-TV                                                      | ③       | J        | D      | O      |                |
|                   | Hit Products Information                                                      | Remarkable and well sold commodity information                                                           | ②/③     | J        | D      | O      |                |
|                   | Hokuriku Honobono Information                                                 | Sightseeing guide of Hokuriku Region                                                                     | ③       | J        | D      | O      |                |
|                   | Home Town Information                                                         | Information on cities, towns, and villages all over Japan                                                | ③       | J        | D      | O      |                |
|                   | Horse Race Tip                                                                | Numerical data of horse race forecasts                                                                   | ③       | J        | D      | O      |                |
|                   | Hotel Directory                                                               | Directory of member hotels of Japan Hotel Association                                                    | ③       | J        | D      | O      |                |
|                   | House of Basic Law Information                                                | Information on law related to daily life and on revision of law                                          | ③       | J        | D      | O      |                |
|                   | I-N Industrial Statistics                                                     | Production, shipment, stock data and trade information for 39 Japanese industries                        | ②       | J        | D      | O      |                |
|                   | Industrial News                                                               | News-release from companies, governments, and related organizations                                      | ②       | J        | D      | O      |                |
|                   | Information Industry Hotline                                                  | Online news-flash for 'The Daily Network News', an industrial newsletter for information industry        | ①/③     | J        | D      | O      |                |
|                   | Information for Obtaining Driver's License                                    | Information on how to obtain driver license                                                              | ③       | J        | D      | O      |                |
|                   | Information of Weekly and Monthly Journals                                    | Title information of major popular journals                                                              | ③       | J        | D      | O      |                |
|                   | Information on Administration of the Ministry of Posts and Telecommunications | Information on the formation of policy by the Ministry of Posts and Telecommunications                   | ②       | J        | D      | O      |                |
|                   | Information on America for Business Use                                       | News and reports related to business in the USA                                                          | ②       | J        | D      | O      |                |
|                   | Information on Marine Pilots License                                          | Information on how to obtain 4th grade marine pilots' license                                            | ③       | J        | D      | O      |                |
|                   | International Trends Weekly                                                   | International trends on politics, economy, and society, as well as on national policy                    | ②       | J        | D      | O      |                |

| Company Name      | Database Name                                | Description of Database                                                                                                  | Subject | Language | Status | Format | Main Countries |
|-------------------|----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|---------|----------|--------|--------|----------------|
| NIFTY Corporation | Introduction to C Language                   | Information on how to write programs in C-language                                                                       | ③       | J        | D      | O      |                |
|                   | J-League News Flash                          | Official data on J-League soccer games                                                                                   | ③       | J        | D      | O      |                |
|                   | JAPAN MARC                                   | Catalog of books published in Japan, delivered to the National Diet Library                                              | ③       | J        | D      | O      |                |
|                   | JETRO ACE                                    | Collection of reports and other materials from overseas points of JETRO, provided with textual and numerical information | ②       | J        | D      | O      |                |
|                   | JETRO-WINDS                                  | Information for promotion of Japanese imports including trade fairs and after-service of imported goods                  | ②       | J        | D      | O      |                |
|                   | JTB Hotel Information                        | Directory of domestic hotels and lodges                                                                                  | ③       | J        | D      | O      |                |
|                   | Kyodo Flash News Database                    | Online newflash from Kyodo News Service                                                                                  | ③       | J        | D      | O      |                |
|                   | Kyodo News Financial and Economic Flash News | Economic news flash from Kyodo News Service                                                                              | ②       | J        | D      | O      |                |
|                   | Kyodo Newflash                               | Newflash from Kyodo News Service                                                                                         | ③       | J        | D      | O      |                |
|                   | Laser Disk Information                       | Domestic on-sale information of laser disks                                                                              | ③       | J        | D      | O      |                |
|                   | Library of Questionnaires by Living People   | Digest version of 'Seikatsusha Data' published by the JMA Research Institute Inc.                                        | ③       | J        | D      | O      |                |
|                   | MAINICHI ONLINE DATABASE                     | Collection of articles from Mainichi Daily News                                                                          | ③       | E        | D      | O      |                |
|                   | MRI Business Letter                          | Full-text of publicly held research reports written by researchers of the Mitsubishi Research Institute                  | ②       | J        | D      | O      |                |
|                   | MRI Seminar Lectures                         | Full-text of lectures at seminars held by Mitsubishi Research Institute                                                  | ③       | J        | D      | O      |                |
|                   | Mainichi Daily News                          | English newflash of Mainichi Shimbun                                                                                     | ③       | E        | D      | O      |                |
|                   | Mainichi Shimbun Company News Release        | News release from Japanese companies and institutions                                                                    | ②       | J        | D      | O      |                |
|                   | Mainichi Shimbun Database                    | Collection of major articles from the Mainichi Shimbun                                                                   | ③       | J        | D      | O      |                |
|                   | Mainichi Shimbun Headline News               | Summary of articles from Mainichi shimbun                                                                                | ③       | J        | D      | O      |                |

| Company Name      | Database Name                                   | Description of Database                                                                                                          | Subject | Language | Status | Format | Main Countries |
|-------------------|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|---------|----------|--------|--------|----------------|
| NIFTY Corporation | Mainichi Shimbun Health and Medical Information | Information on health, beauty care, and medical services                                                                         | ③       | J        | D      | O      |                |
|                   | Mainichi Shimbun Kansai News                    | Summary of news flash from Mainichi Shimbun Kansai (Western Japan) version                                                       | ③       | J        | D      | O      |                |
|                   | Mainichi Shimbun Lottery Information            | Referral of winning number of lottery and other information                                                                      | ③       | J        | D      | O      |                |
|                   | Mainichi Shimbun Newsflash                      | Newsflash from Mainichi Shimbun                                                                                                  | ③       | J        | D      | O      |                |
|                   | Mainichi Shimbun Photographic Database          | News photograph database                                                                                                         | ③       | J        | D      | O      |                |
|                   | Mainichi Shimbun Regional News                  | Real-time regional news from Mainichi Shimbun                                                                                    | ③       | J        | D      | O      |                |
|                   | Manual of Company Events and Festivals          | Instructional manual on how to proceed company events and festivals                                                              | ③       | J        | D      | O      |                |
|                   | Market Search                                   | Reference to the market research reports issued by public and private institutions                                               | ②/③     | J        | D      | O      |                |
|                   | Music CD Catalog                                | Bibliographic and price information with critics for music CD, from 'CD Journal', a monthly publication                          | ③       | J        | D      | O      |                |
|                   | NHK News Flash                                  | Broadcasted news texts from NHK                                                                                                  | ③       | J        | D      | O      |                |
|                   | NHK News Texts                                  | Broadcasted news texts by NHK                                                                                                    | ③       | J        | D      | O      |                |
|                   | NICHIGAI ASSIST                                 | Information on biography ('WHO'), books ('BOOK'), journal articles ('MAGAZINE'), and corporate management tactics ('MANAGEMENT') | ②/③     | J        | D      | O      |                |
|                   | NIPPAN MARC                                     | Catalog of books published in Japan, distributed by Nihon Shuppan Hambai                                                         | ③       | J        | D      | O      |                |
|                   | New Business Hi-Tech Information                | Technological and products information of Japanese high-technology industries                                                    | ①/②     | J        | D      | O      |                |
|                   | New Business Industry Reports                   | Research reports of 350 remarkable industries' business trends and analysis                                                      | ②/③     | J        | D      | O      |                |
|                   | Nihon Kogyo Shimbun Database                    | Collection of articles from 'Nihon Kogyo Shimbun'                                                                                | ③       | J        | D      | O      |                |

| Company Name      | Database Name                                         | Description of Database                                                                                                                | Subject | Language | Status | Format | Main Countries |
|-------------------|-------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|---------|----------|--------|--------|----------------|
| NIFTY Corporation | Nihon Nogyo Shimbun Articles                          | Collection of agricultural articles from 'Nihon Nogyo Shimbun'                                                                         | ③       | J        | D      | O      |                |
|                   | Nihon Shokuryo Shimbun Database                       | Collection of articles from 'Nihon Shokuryo Shimbun'                                                                                   | ③       | J        | D      | O      |                |
|                   | Nikkan Kogyo Shimbun Database                         | Collection of articles from Nikkan Kogyo Shimbun                                                                                       | ③       | J        | D      | O      |                |
|                   | Nikkan Sports Newspaper Information                   | Collection of articles from Nikkan Sports Newspaper                                                                                    | ③       | J        | D      | O      |                |
|                   | Online Stock Price Newsflash                          | Stock price news from first and second section of Tokyo Stock Exchange (TSE)                                                           | ②       | J        | D      | O      |                |
|                   | PC Hardware Database                                  | Description and price information on PC hardware products                                                                              | ③       | J        | D      | O      |                |
|                   | PC New Products                                       | Description and price information of new PC products                                                                                   | ③       | J        | D      | O      |                |
|                   | PIA Road Show Information                             | Updated road show guide                                                                                                                | ③       | J        | D      | O      |                |
|                   | PIA Ticket Guide                                      | Purchasing guide for tickets                                                                                                           | ③       | J        | D      | O      |                |
|                   | Per-Golf Information                                  | Results of tournaments and new products on golf                                                                                        | ③       | E        | D      | O      |                |
|                   | Pharmaceutical Company Information                    | Company information of pharmaceutical industry                                                                                         | ②       | J        | D      | O      |                |
|                   | Precious Metal Market                                 | Information on precious metal prices                                                                                                   | ③       | J        | D      | O      |                |
|                   | Pro-baseball Game News                                | Daily game news of pro-baseball                                                                                                        | ③       | J        | D      | O      |                |
|                   | Q & A on Taxation                                     | Basic information on taxation in Q & A style with letters or tax law                                                                   | ③       | J        | D      | O      |                |
|                   | Questionnaire Data for Youth                          | Data collected from young women living in the Tokyo metropolitan area                                                                  | ③       | J        | D      | O      |                |
|                   | Ranking of University Entrance by Yoyogi Seminar      | Information on the difficulty of university examination based on the survey conducted by Yoyogi Seminar, a preparatory school          | ③       | J        | D      | O      |                |
|                   | Reference on Research Reports                         | Summary of research reports from public and private research institutions                                                              | ②/③     | J        | D      | O      |                |
|                   | Reference to Music of TV, Movie, and Commercial Songs | Information on title, artists' name, and CD new title publication of theme song and music of TV programs, movies, and commercial songs | ③       | J        | D      | O      |                |

| Company Name      | Database Name                                  | Description of Database                                                            | Subject | Language | Status | Format | Main Countries |
|-------------------|------------------------------------------------|------------------------------------------------------------------------------------|---------|----------|--------|--------|----------------|
| NIFTY Corporation | Reports from Mitsubishi Research Institutes    | Forecasts for 90's of various fields based on case studies                         | ②/③     | J        | D      | O      |                |
|                   | Robots and FA Products                         | Information on industrial robots and factory automation products                   | ①       | J        | D      | O      |                |
|                   | SUPONICHI Entertainment Information            | Entertainment and show business information                                        | ③       | J        | D      | O      |                |
|                   | SUPONICHI F1 News                              | News flash on the results of F1 races                                              | ③       | J        | D      | O      |                |
|                   | SUPONICHI Horse Racing News                    | Information on horse racing and popular horses                                     | ③       | J        | D      | O      |                |
|                   | SUPONICHI Sumo Information                     | News flash on victory or defeat of Sumo matches                                    | ③       | J        | D      | O      |                |
|                   | Safety information for Passengers Abroad       | Safety information for Japanese passengers abroad                                  | ③       | J        | D      | O      |                |
|                   | Sanwa Soken Financial and Economic Information | Information of foreign money exchange market and economic news                     | ②       | J        | D      | O      |                |
|                   | Sight-seeing Information                       | Information on festivals, events, sight-seeing spots, and accommodations           | ③       | J        | D      | O      |                |
|                   | Star System Video List                         | Major video movies casted by popular foreign actors and actresses                  | ③       | J        | D      | O      |                |
|                   | TEIKOKU DATABANK FINANCIAL INFORMATION         | Financial information of 250,000 Japanese major companies                          | ②       | J        | D      | O      |                |
|                   | TKC Legal Information                          | Judicial precedent and related information on civil cases and administrative cases | ③       | J        | D      | O      |                |
|                   | TSR Company Information                        | Summarized data on 500,000 Japanese companies                                      | ②       | J        | D      | O      |                |
|                   | TSR Financial Information                      | Financial Information of 50,000 Japanese major companies                           | ②       | J        | D      | O      |                |
|                   | TV and Movie Daily Guide                       | Ratings of TV programs and movies                                                  | ③       | J        | D      | O      |                |
|                   | The Teleputing Hotline                         | News related to telecommunication and information in English                       | ③       | E        | D      | O      |                |
|                   | The Yomiuri News Service                       | News flash in English language from Yomiuri Shimbun                                | ③       | E        | D      | O      |                |

| Company Name      | Database Name                                    | Description of Database                                                        | Subject | Language | Status | Format | Main Countries |
|-------------------|--------------------------------------------------|--------------------------------------------------------------------------------|---------|----------|--------|--------|----------------|
| NIFTY Corporation | This Week's Stocks to be Watched                 | Information on remarkable stocks selected by editors of investment magazines   | ②       | J        | D      | O      |                |
|                   | Title Information of Weekly and monthly Journals | Title information of 32 popular journals                                       | ③       | J        | D      | O      |                |
|                   | Title Search                                     | Table of contents of industrial and technological magazines issued in Japan    | ③       | J        | D      | O      |                |
|                   | Toku-Toku Information                            | Information on benefits, premiums, and gifts offered from various media        | ③       | J        | D      | O      |                |
|                   | Tokyo Community Guide                            | City-life information collected from Tokyo city and its 23 wards               | ③       | J        | D      | O      |                |
|                   | Tokyo survival Guide                             | Guidance information on Tokyo in English                                       | ③       | E        | D      | O      |                |
|                   | Top of Morning Newspapers                        | Newsflash of top articles from national newspapers                             | ③       | J        | D      | O      |                |
|                   | Topics of PC Journals                            | Bibliographic information of articles of major PC journals                     | ③       | J        | D      | O      |                |
|                   | Toyo Keizai Company Information                  | Detailed information on Japanese listed companies and foreign owned companies  | ②       | J        | D      | O      |                |
|                   | Travel, Taste and Sports                         | Profiles and special information on travel, local tastes, and sport facilities | ③       | J        | D      | O      |                |
|                   | Trends in New York                               | City guide for New York City                                                   | ③       | J        | D      | O      |                |
|                   | Trends in Paris                                  | City guide for Paris                                                           | ③       | J        | D      | O      |                |
|                   | Tsukiji Fish Market Price Information            | Flesh fish wholesale price information from Tsukiji Fish Market                | ②       | J        | D      | O      |                |
|                   | Updated Fishing Information                      | Information on techniques and points of fishing                                | ③       | J        | D      | O      |                |
|                   | Urban Development Information                    | Urban development and planning information of Japan                            | ③       | J        | D      | O      |                |
|                   | Video and Laser Disk Information                 | Domestic on-sale information of videos, laser disks, and compact disc videos   | ③       | J        | D      | O      |                |
|                   | World Report                                     | Information extracted from 'Trade-pia' world report                            | ③       | J        | D      | O      |                |
|                   | Yamagata Regional Information                    | Sightseeing guide of Yamagata Prefecture                                       | ③       | J        | D      | O      |                |
|                   | Yomiuri Shimbun Database                         | Collection of almost all articles from the Yomiuri Shimbun                     | ③       | J        | D      | O      |                |
|                   | Yomiuri Shimbun Newsflash                        | Newsflash from Yomiuri Shimbun                                                 | ③       | J        | D      | O      |                |

| Company Name                                                          | Database Name                                             | Description of Database                                                                                                                                                            | Subject | Language | Status | Format | Main Countries                                                                         |
|-----------------------------------------------------------------------|-----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------|--------|--------|----------------------------------------------------------------------------------------|
| Nihon Keizai Shimbun, Inc.<br>(NIKKEI)                                | Asian Corporate Profile                                   | Description of companies in Asia including 12,000 Chinese manufacturers, 1,800 Korean listed companies, 600 Hong Kong listed companies, and 1,000 Japanese-owned companies in Asia | ②       | E        | D      | O/M    | U.S.A., U.K., Germany, France, Switzerland, Italy, Canada, Hong Kong, Singapore, Korea |
|                                                                       | Data on Borrowing by Financial Institutions               | Data on borrowing by financial institutions provided by the Industrial Bank of Japan                                                                                               | ②       | J/E      | D      | O/M    |                                                                                        |
|                                                                       | IFS Data                                                  | Financial statistics and price indices with GNP for IMF member countries                                                                                                           | ②       | E        | D      | O      |                                                                                        |
|                                                                       | Input-Output Tables                                       | Expanded input-output table originally developed by NIKKEI, basic government table and its supplements, and connected industry input-output table are included                     | ②       | J/E      | D      | O      |                                                                                        |
|                                                                       | OECD Economic File                                        | Major economic indices including GNP, production, employment, consumer price, and international exchange for 25 major nations                                                      | ②       | E        | D      | O      |                                                                                        |
|                                                                       | OECD National Income Statistics File                      | National expenditure and its itemized break-down for 13 industrial nations                                                                                                         | ②       | E        | D      | O      |                                                                                        |
|                                                                       | World Bank External Debt Statistics                       | Balance of debts and other economic indices of 105 developing countries                                                                                                            | ②       | E        | D      | O      |                                                                                        |
|                                                                       | CITIBASE                                                  | Major economic statistics and indices for United States                                                                                                                            | ②       | E        | D      | O      |                                                                                        |
| Research Institute of International Trade and Industry                | Input-Output Table                                        | Input-output table of Japanese industries, provided by the Ministry of International Trade and Industry (MITI)                                                                     | ②       | O        | A      | M      | U.S.A.                                                                                 |
| The Japan Information Center of Science and Technology (JICST) / JOIS | Nikkan Kogyo File on New Technology and Products in Japan | Database of the Nikkan Kogyo Shimbun (industrial newspaper)                                                                                                                        | ②       | E        | D      | O      | U.S.A., U.K., Germany, Korea                                                           |
| The Japan Information Center of Science and Technology (JICST) / STN  | CABA                                                      | Worldwide database of agricultural and related literature, since 1973                                                                                                              | ①       | E        | D      | O      | U.S.A., U.K., Europe, and others                                                       |
|                                                                       | EMBASE                                                    | Bibliographic information of life science, medicine, and pharmaceuticals produced by Excerpta Medica                                                                               | ①       | E        | D      | O      |                                                                                        |
|                                                                       | FSTA                                                      | Bibliographic database containing the literature in food science and food industry in general                                                                                      | ①       | E        | D      | O      |                                                                                        |

| Company Name                                                         | Database Name                      | Description of Database                                                                               | Subject | Language | Status | Format | Main Countries                   |
|----------------------------------------------------------------------|------------------------------------|-------------------------------------------------------------------------------------------------------|---------|----------|--------|--------|----------------------------------|
| The Japan Information Center of Science and Technology (JICST) / STN | MEDLINE                            | Worldwide database of medical literature, produced by the National Library of Medicine                | ①       | J        | D      | O      | U.S.A., U.K., Europe, and others |
|                                                                      | Bibliographic Information Database | Bibliographic information (title, publisher, author, price, etc.) of books on sale published in Japan | ①       | J        | D      | C      |                                  |

**Table 4 Japanese Database 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

Format: O: Online  
M: MT, FD

| Database Name                                  | Description of Database                                                                                                                          | Subject | Language | Format |
|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------|--------|
| Attributes of Japanese Companies               | Information on Japanese companies' attributes including brand code, company name, etc.                                                           | ②       | J        | M      |
| BRANDY                                         | Retrieval system for character and figure of Japanese trademarks                                                                                 | ②       | J        | O      |
| DIALINE                                        | Collection of files including JAPAN/MARC, NIPPAN-MARC, Hit Products, New York Market Trends, Paris Market Trends, and other business information | ①/②/③   | J        | O      |
| Database of Japanese Public Patents in English | Abstracts in English of Japanese public patents since October, 1976                                                                              | ①       | E        | M      |
| FITT                                           | Information on price, market trends, and statistical data on forward transaction                                                                 | ②       | J/E      | O/M    |
| Financial Performance                          | Financial information for company analysis including basic data such as P/L and B/S, as well as value-added data                                 | ②       | J        | M      |
| H-NMR Spectral Database                        | Nuclear Magnetic Resonance (NMR) data of 8,000 organic chemicals                                                                                 | ①       | E        | M      |
| Japanese Language Education and Research       | Collection of articles and data on Japanese language educational methods                                                                         | ③       | J        | C      |
| Kitasato Microbial Chemistry Database          | Collection of physical and chemical data of microbes, covering anti-biotic materials and physical activated materials of radioactive bacteria    | ①       | E        | M(FD)  |
| Mac Safira                                     | Osteological database of whole body human bone, with visual data, written in Japanese and Latin languages                                        | ③       | J/Latin  | C      |
| NRI 400                                        | Information on stock price and financial indices calculated by Nomura Research Institute (NRI)                                                   | ②       | J        | M      |
| NRI-BPI                                        | Bond performance index calculated by Nomura Research Institute (NRI)                                                                             | ②       | J        | M      |
| NRVE                                           | Information on Japanese economy, industry, and finance                                                                                           | ②       | E        | O      |
| PHARMACAST                                     | Information on domestic and international test drug and new medicine                                                                             | ①       | E        | O/M    |
| SCI                                            | Purchasing trends of 10,000 households in Japan                                                                                                  | ②       | E        | M      |
| Transaction of Capitals                        | Information on adjusting coefficients and number of issued stocks                                                                                | ②       | J        | M      |

**Table 5 Address and Contacts (1993 : Producers/Distributors)**

| Company Name                                    | Contacts                                                | Address                                                                      | Telephone       | Facsimile       | Status                 |
|-------------------------------------------------|---------------------------------------------------------|------------------------------------------------------------------------------|-----------------|-----------------|------------------------|
| A.C. Nielsen Company of Japan, Ltd. (ACN-Japan) | Marketing Services, A.C. Nielsen Company of Japan, Ltd. | 1-1-71 Nakameguro, Meguro-ku, Tokyo 153                                      | +81(3)3710-6551 | +81(3)3791-5891 | Branch Office in Japan |
|                                                 | Nielsen Plaza                                           | Northbrook, IL 60062, U.S.A.                                                 | 708-498-6300    | 708-498-7662    | Branch Office          |
| ADVANSIS, INC.                                  | ADVANSIS, INC.                                          | 2-8-6 Shinjuku, Shinjuku-ku, Tokyo 160, Japan                                | +81(3)3352-2591 | +81(3)3350-0589 | Headquarter            |
|                                                 | GfK Handelsforschung GmbH & Co. KG                      | Nordwestring 101, D-8500 Nurnberg 90, Germany                                | 0911-3950       | 0911-336970     | Agent                  |
|                                                 | NPD                                                     | 900 West Shore Road, Port Washington, NY 11050-0402, U.S.A.                  | 516-625-0700    |                 | Partner                |
| ASAHI SHIMBUN                                   | New Electronic Media Div., ASAHI SHIMBUN                | 5-3-2 Tsukiji, Chuo-ku, Tokyo 104-11, Japan                                  | +81(3)3545-0131 | +81(3)3544-0474 | Headquarter            |
| Asia Data Research, Inc. (ADR)                  | Asia Data Research, Inc.                                | 7F Shiratori Bldg., 2-1-2 Shinjuku, Shinjuku-ku, Tokyo 160, Japan            | +81(3)3352-6215 | +81(3)3352-2579 | Headquarter            |
|                                                 | ADR Marketing Service, Ltd.                             | Room 2314, Park-in Commercial Center, 56 Dundas Street, Yaumatai, Hong Kong  | 852-359-3333    | 852-332-5841    |                        |
|                                                 | GfK Handelsforschung GmbH & Co. KG                      | Nordwestring 101, D-8500 Nurnberg 90, Germany                                | 0911-3950       | 0911-336970     | Agent                  |
| C. Industrial Research Institute                | C. Industrial Research Institute                        | 4-32-6-709 Nishi-Shinjuku, Shinjuku-ku, Tokyo 160, Japan                     | +81(3)3377-9886 | +81(3)3377-9876 | Headquarter            |
| COMLINE Business Data, Inc.                     | COMLINE Business Data, Inc.                             | MRX Bldg. 1-12-5, Hamamatsu-cho, Minato-ku, Tokyo 105, Japan                 | +81(3)5401-4567 | +81(3)5401-2345 | Headquarter            |
|                                                 | Elsevier Advanced Technology                            | Mayfield House, 156 Banbury Road, Oxford OX2 7dh, U.K.                       | 0865-512242     | 0865-310981     | Agent                  |
|                                                 | Global Business Data, inc.                              | 10601 S. DeAnza Blvd., Suite #216, Cupertino, CA 95014, U.S.A.               | 408-257-9956    | 408-257-0695    | Agent                  |
|                                                 | MICROINFO LIMITED                                       | Omega Park, Alton, Hants, GU34 2PG, U.K.                                     | 0420-86848      | 0420-89889      | Agent                  |
|                                                 | PJB Publications                                        | 18/20 Hill Rise, Richmond Surrey, TF10 6UA, U.K.                             | 01-948-3262     | 01-948-6866     | Agent                  |
|                                                 | Ulmer Brothers, Inc.                                    | 80 Maiden Ln., 22nd Floor, New York, NY 10038, U.S.A.                        | 212-344-8074    | 212-344-8074    | Agent                  |
| DAISO MEDIA SERVICE (DMS)                       | DAISO MEDIA SERVICE                                     | 2-13-27 Miyamae, Suginami-ku, Tokyo 168, Japan                               | +81(3)3331-7751 | +81(3)3331-9193 | Headquarter            |
| Database Promotion Center, Japan (DPC)          | Database Promotion Center, Japan                        | 7F World Trade Center Bldg., 2-4-1 Hamamatsu-cho, Minato-ku, Tokyo 105 Japan | +81(3)3459-8581 | +81(3)3432-7558 | Headquarter            |

| Company Name                                                             | Contacts                                                                        | Address                                                                               | Telephone         | Facsimile        | Status                    |
|--------------------------------------------------------------------------|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------|------------------|---------------------------|
| Dataquest Japan, Ltd.<br>(DQJ)                                           | Dataquest Japan, Ltd.                                                           | Shinkawa Sanko Bldg., 1-3-17<br>Shinkawa, Chuo-ku, Tokyo<br>104, Japan                | +81(3)5566-0411   | +81(3)5566-0425  | Branch Office in<br>Japan |
|                                                                          | Dataquest, Inc.                                                                 | 1290 Ridder Park Drive, San<br>Jose, CA 95131-2398, U.S.A.                            | 408-437-8000      | 408-437-0292     | Headquarter               |
| DENTSU, Inc.                                                             | Electronic<br>Library Division,<br>DENTSU INC.                                  | 1-11 Tsukiji, Chuo-ku, Tokyo<br>104 Japan                                             | +81(3)3544-7116   | +81(3)3541-7705  | Headquarter               |
| Dun & Bradstreet Business<br>Information Services,<br>Japan K.K. (D & B) | Dun & Bradstreet<br>Business<br>Information<br>Service (Japan)<br>K. K.         | 6F, Nishi-Azabu-Mitsui Bldg.,<br>4-17-30 Nishi-Azabu, Minato-<br>ku, Tokyo, 106 Japan | +81(3)5485-0451   | +81(3)5485-0646  | Branch Office in<br>Japan |
| ELECTRONIC LIBRARY<br>Inc. (EL)                                          | Electronic<br>Library Inc.                                                      | KORINZU 8, 8-11-13 Nishi-<br>Gotanda, Shinagawa-ku,<br>Tokyo 141, Japan               | +81(3)3779-1211   | +81(3)3779-1227  | Headquarter               |
| G. Search Corporation                                                    | G-Search<br>Corporation                                                         | 8F, Houkou-Kowa Bldg., 1-2-4<br>Tsukiji, Chuo-ku, Tokyo 104,<br>Japan                 | +81(3)5565-1480   | +81(3)5565-4012  | Headquarter               |
|                                                                          | JSP Co., Ltd.                                                                   | 2 Jurong East Street 21, #01-<br>74, IMM Building, Singapore<br>2260                  | +65-568-2174      |                  | Agent                     |
|                                                                          | SOFTWARE<br>INFORMATION<br>SYSTEMS                                              | Friedrich-Ebert-Str. 20, 4000<br>Dusseldorf 1, Germany                                | 0211-358493       | 0211-358300      | Agent                     |
| Information Service<br>International-Dentsu, Ltd.<br>(ISI-Dentsu)        | Information<br>Service<br>International-<br>Dentsu                              | 4-11-10 Nakano, Nakano-ku,<br>Tokyo 164, Japan                                        | +81(3)3228-6123   | +81(3)3319-6922  | Headquarter               |
|                                                                          | ISI-Dentsu of<br>AMERICA                                                        | 1114 Avenue of the Americas,<br>New York, NY 10038, U.S.A.                            | 212-789-2300      | 212-789-2333     | Branch Office             |
|                                                                          | ISI-Dentsu of<br>ASIA                                                           | Suite 1001, Central Plaza, 18<br>Harbour Road, Wanchai, Hong<br>Kong                  | 829-0829          | 802-8477         | Branch Office             |
|                                                                          | ISI-Dentsu of<br>EUROPE                                                         | 4th Floor, Imperial House, 15-<br>19 Kingsway, London WC2<br>6UV, UK                  | 71-836-4666       | 71-404-0392      | Branch Office             |
| Institute for Financial<br>Affairs, Inc. (IFFAI)                         | Institute for<br>Financial Affairs,<br>Inc.                                     | 19 Minami-Motomachi,<br>Shinjuku-ku, Tokyo 160, Japan                                 | +81(3)3355-1619   | +81(3)3359-7947  | Headquarter               |
| Japan Association for<br>International Chemical<br>Information (JAICI)   | Japan<br>Association for<br>International<br>Chemical<br>Information<br>(JAICI) | Gakkai-Center Bldg. 2-4-16<br>Yayoi, Bunkyo-ku, Tokyo 113,<br>Japan                   | +81(3)3816-3389   | +81(3)3816-7826  | Headquarter               |
|                                                                          | FIZ CHEMIE                                                                      | Fachinformationzentrum<br>chemie GmbH, Steinplatz 2, D<br>1000, Berlin, Germany       | +49(0)30-31900360 | +49(0)30-3132037 | Agent                     |
|                                                                          | Paul Heller &<br>Milne, Inc.                                                    | 9520 Linden Avenue,<br>Bethesda, MD 20814, U.S.A.                                     | 301-493-6595      | 301-897-3487     | Agent                     |
| Japan Audit Bureau of<br>Circulations (JABC)                             | Japan Audit<br>Bureau of<br>Circulations                                        | Shisei-Kaikan, 1-3 Hibiya-<br>Koen, Chiyoda-ku, Tokyo 100,<br>Japan                   | +81(3)3501-1491   | +81(3)3501-1494  | Headquarter               |

| Company Name                                                   | Contacts                                                                   | Address                                                                     | Telephone            | Facsimile        | Status                |
|----------------------------------------------------------------|----------------------------------------------------------------------------|-----------------------------------------------------------------------------|----------------------|------------------|-----------------------|
| The Japan Information Center of Science and Technology (JICST) | The Japan Information Center of Science and Technology                     | 2-5-2 Nagata-cho, Chiyoda-ku, Tokyo 100, Japan                              | +81(3)3581-6448      | +81(3)3581-6446  | Headquarter           |
|                                                                | Aho & Meguro                                                               | P.O. Box 34, SF-00371, Helsinki, Finland                                    | +358(0)565-3815      | +358(0)565-3820  | Branch Office / Agent |
|                                                                | Data Communications Corp. of Korea (DACOM) Foreign DB Service Section      | 140-716 DANCOR Building 65-228, 3-Ga, Han Gang-Ro Yong San-Gu, Seoul, Korea | +82(2)791-1609       | +82(2)796-8811   | Branch Office / Agent |
|                                                                | Gesellschaft für Mathematik und Datenverarbeitung mbH (GMD) GMD-AIA        | P.O. Box 1240, W-5205, Sankt Augustin 1, Germany                            | +49-2241-14-2271     | +49-2241-14-2090 | Branch Office / Agent |
|                                                                | Institute de l'Information Scientifique et Technique (INIST) Cellula Japon | 2, allée du Parc de Brabais Vandoeuvreles-Nancy Cedex 54514, France         | +33-83504680         | +33-83504683     | Branch Office / Agent |
|                                                                | Microinfo Limited                                                          | P.O. Box 3, Omega Park Alton, Hampshire GU34 2PG, U.K.                      | +44-420-86848        | +44-420-89889    | Branch Office / Agent |
| Japan Patent Organization (JPIO)                               | Japan Patent Organization                                                  | 4-1-7 Toyo, Koto-ku, Tokyo 135, Japan                                       | +81(3)5690-5555      | +81(3)5690-5566  | Headquarter           |
|                                                                | DIALOG Information Services, Inc.                                          | 3460 Hillview Avenue, Palo Alto, CA 94304, U.S.A.                           | 415-858-4078         | 415-858-7069     | Agent                 |
|                                                                | InfoPro Technologies, Inc.                                                 | 800 West Park Drive, Mclean, Virginia 22102, U.S.A.                         | 703-442-0900         | 703-893-4632     | Agent                 |
|                                                                | Questel S.A.                                                               | Le Capitole 55, avenue des champs Pierreux 92012 Nanterre Cedex, France     | 33-1-4614-5555       | 33-1-46145511    | Agent                 |
| Japan Pharmaceutical Information Center (JAPIC)                | Japan Pharmaceutical Information Center                                    | Nagai-Kinenkan 3F, 2-12-15 Shibuya, Shibuya-ku, Tokyo 105, Japan            | +81(3)5466-1823      | +81(3)5466-1814  | Headquarter           |
| Keizai Bunken Kenkyukai                                        | Keizai Bunken Kenkyukai                                                    | Keidanren Library, 1-9-4 Ohtemachi, Chiyoda-ku, Tokyo 100, Japan            | +81(3)3279-1411ex353 |                  | Headquarter           |
| Kyodo News Service (KYODO)                                     | Kyodo News Service                                                         | 2-2-5 Toranomon, Minato-ku, Tokyo 105, Japan                                | +81(3)3585-0920      | +81(3)3505-5592  | Headquarter           |
|                                                                | KNI (Kyodo News International Inc.)                                        | 50 Rockefeller Plaza, suite 815, New York, NY 10020, U.S.A.                 | 212-397-3723         | 212-397-3721     | Branch Office         |
| MARUZEN CO., LTD.                                              | MARUZEN CO., LTD.                                                          | MASIS CENTER, 2-3-10 Nihonbashi, Chuo-ku, Tokyo 103, Japan                  | +81(3)3271-6068      | +81(3)3271-6082  | Headquarter           |
|                                                                | Maruzen Co., Ltd. (London Office)                                          | 103 Mount Street, London W1Y 5HE, U.K.                                      | 071-409-0288         | 071-409-7712     | Branch Office         |

| Company Name                        | Contacts                                                    | Address                                                                 | Telephone       | Facsimile       | Status          |
|-------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------------------|-----------------|-----------------|-----------------|
| MARUZEN CO., LTD.                   | Maruzen International Co., Ltd.                             | 1200 Harbour Blvd., 10th Floor, Weehawken, NJ 07087, U.S.A.             | 201-865-4400    | 201-865-4845    | Partner         |
| Media Research Center, Inc. (MRC)   | Media Research Center, Inc.                                 | Nyuko-Bldg., 6-40 Shin-Ogawa-Machi, Shinjuku-ku, Tokyo 162, Japan       | +81(3)5261-5555 | +81(3)5261-5544 | Headquarter     |
| NANSEI Research & Institute, Inc.   | NANSEI Research & Institute, Inc.                           | 2F Taiyo Bldg. 2-31-25 Yushima, Bunkyo-ku, Tokyo 113, Japan             | +81(3)5689-5291 | +81(3)5689-5293 | Headquarter     |
| National Diet Library (NDL)         | National Diet Library (NDL)                                 | 1-10-1 Uchi-Nagata-cho, Chiyoda-ku, Tokyo 100, Japan                    | +81(3)3581-2331 | +81(3)3597-5617 | Headquarter     |
| New Glass Forum (NGF)               | New Glass Forum (NGF)                                       | Nihon Garasu Kogyo Center, 3-1-9 Shimbashi, Minato-ku, Tokyo 105, Japan | +81(3)3595-2775 | +81(3)3595-0258 | Headquarter     |
| NEC Corporation (NEC)               | NEC Corporation (NEC)                                       | 5-7-1 Shiba, Minato-ku, Tokyo 108                                       | +81(3)3798-6081 | +81(3)3798-9170 | Headquarger     |
| NHK JOHO NETWORK INC. (NHK-JN)      | NHK JOHO NETWORK INC.                                       | 9-23 Kamiyama-cho, Shibuya-ku, Tokyo 150, Japan                         | +81(3)3481-1771 | +81(3)3481-1777 | Headquarter     |
| NIFTY Corporation                   | NIFTY Corporation                                           | Ohmori Bell-Port A, 6-26-1 Minami-Ohi, Shinagawa-ku, Tokyo 140, Japan   | +81(3)5471-4854 | +81(3)5471-5890 | Headquarter     |
|                                     | CompuServe Inc.                                             | 5000 Airlington Center Boulevard, Columbuns, OH 43220, U.S.A.           | 614-457-8600    | 614-457-0504    | Partner         |
|                                     | POSDATA COMPANY, LTD. Overseas Information Service          | 2F Taeharjedang Bldg., 7-23 Shincheon-dong, Songpa-gu, Seoul, Korea     | 02-411-1327     | 02-411-1555     | Partner / Agent |
|                                     | Taiwan Telecommunicati on Network Services, Co., Ltd. (TTN) | 15F, 120 Chien-Kuo, N. Road, Sec 2, Taipei, Taiwan                      | 02-515-0330     | 02-504-5593     | Partner / Agent |
| Nichigai Associates, Inc.           | Nichigai Associates, Inc.                                   | Dai 3 Shimokawa Bldg., 1-23-8 Oomori-kita, Ohta-ku, Tokyo 143, Japan    | +81(3)3763-5241 | +81(3)3764-0845 | Headquarter     |
| Nihon Keizai Shimbun, Inc. (NIKKEI) | Nihon Keizai Shimbun, Inc.                                  | 1-9-5 Ohtemachi, Chiyoda-ku, Tokyo 100-66, Japan                        | +81(3)5294-2406 | +81(3)5294-2411 | Headquarter     |
|                                     | Mitsui & Co., UK Ltd.                                       | 20 Old Bailey, London EC4M 7QQ, U.K.                                    | +44-71-822-0431 | +44-71-822-0689 | Agent           |
|                                     | NIHON KEIZAI SHIMBUN AMERICA, INC. New York Office          | 1325 Avenue of Americas, #2500, New York, NY 10019, U.S.A.              | +1-212-261-6241 | +1-212-261-6209 | Branch Office   |
|                                     | NIHON KEIZAI SHIMBUN AMERICA, INC. Los Angeles Office       | 725 South Figueroa Street, #1515, Los Angeles, CA 90017, U.S.A.         | +19213-955-7470 | +1-213-955-7479 | Branch Office   |
|                                     | NIHON KEIZAI SHIMBUN EUROPE LTD.                            | Bush House, Aldwych, London EC2B 4PJ, U.K.                              | +44-71-379-4994 | +44-71-379-0378 | Branch Office   |

| Company Name                                                 | Contacts                                                           | Address                                                                          | Telephone       | Facsimile       | Status        |
|--------------------------------------------------------------|--------------------------------------------------------------------|----------------------------------------------------------------------------------|-----------------|-----------------|---------------|
| Nihon Keizai Shimbun, Inc.<br>(NIKKEI)                       | NIHON KEIZAI<br>SHIMBUN<br>SINGAPORE<br>PTD LTD.                   | 331 North Bridge Road, #13-<br>02/03, Odeon Towers,<br>Singapore 0718            | +65-336-4122    | +65-336-4016    | Branch Office |
|                                                              | Maeil Kyungje -<br>The Economic<br>Daily                           | Seoul, Korea                                                                     | +82-2-274-5939  | +82-2-278-1310  | Agent         |
| Nomura Research Institute<br>Co., Ltd. (NRI)                 | Nomura<br>Research<br>Institute Co., Ltd.                          | Daini-Yamaman-Bldg., 6-7<br>Koami-cho, Nihonbashi, Chuo-<br>ku, Tokyo 103, Japan | +81(3)3249-9402 | +81(3)3639-2900 | Headquarter   |
|                                                              | WEFA, Inc.                                                         | Suite 300, 401 City Line<br>Avenue, Bala Cynwyd, PA<br>19004, U.S.A.             | 215-660-6312    | 215-660-6476    | Partner       |
| Research Institute of<br>International Trade and<br>Industry | Research<br>Institute of<br>International<br>Trade and<br>Industry | Kibiki-kan Ginza-Bldg., 2-8-9<br>Ginza, Chuo-ku, Tokyo 104,<br>Japan             | +81(3)3535-5348 | +81(3)3535-5347 | Headquarter   |
| TEIKOKU DATABANK,<br>LTD. (TDB)                              | TEIKOKU<br>DATABANK,<br>LTD.                                       | 2-5-20 Minami-Aoyama,<br>Minato-ku, Tokyo 107, Japan                             | +81(3)3408-1108 | +81(3)3404-4339 | Headquarter   |
|                                                              | TEIKOKU<br>DATABANK<br>AMERICA, INC.                               | 750 Lexington Avenue, 28th<br>Floor, New York, NY 10022,<br>U.S.A.               | 212-486-2637    | 212-486-2638    | Branch Office |
| Tohan Corporation                                            | Tohan<br>Corporation                                               | 6-24 Higashi-Goken-cho,<br>Shinjuku-ku, Tokyo 162, Japan                         | +81(3)3266-9517 |                 | Headquarter   |
| Toyo Information Systems,<br>Co., Ltd. (TIS)                 | Toyo Information<br>Systems, Co.,<br>Ltd.                          | 1-11-7 Shimbashi, Minato-ku,<br>Tokyo 105, Japan                                 | +81(3)3575-4300 | +81(3)3575-4355 | Headquarter   |
| TOYO KEIZAI INC.                                             | TOYO KEIZAI<br>INC.                                                | 1-2-1 Hongoku-cho,<br>Nihonbashi, Chuo-ku, Tokyo<br>103, Japan                   | +81(3)3408-1108 | +81(3)3404-4339 | Headquarter   |
| THE YOMIURI SHIMBUN                                          | THE YOMIURI<br>SHIMBUN                                             | 1-17-1 Ohtemachi, Chiyoda-<br>ku, Tokyo 100-55, Japan                            | +81(3)3217-8217 | +81(3)3217-8979 | Headquarter   |

---

## **2. Problems Encountered by Database Services in Globalization**

Answers to the question on what sort of issues arise while planning or providing database services for overseas use disclosed a variety of issues, which are summarized as follows:

### **(1) Problems in Language and Translation (Ten respondents)**

- When offering bibliographic databases of Japanese literature, it is necessary to translate them, at least, into English in order to avoid the language barrier.
- It is said that many overseas institutions employ staff with Japanese language proficiency for gathering information from Japan. But, translation into English is necessary for Japanese databases to be used widely in overseas marketplace.
- Timeliness, one of the crucial point for success of information services, require automatic translation systems in translating Japanese text into English. However, current automatic translation system does not always translate technical terms. "Cost of translation is too expensive to offer such services continuously.
- Development of English version from Japanese language database require too much cost and manpower.
- Through developing a prototype of English language database, it was found that the correct translation ratio in business field, especially, names of companies and organizations, are very low. Increase of the correct translation ratio will require enrichment of the dictionary file. This is a very cost-consuming task.
- Preparation of brochure and user manuals in both Japanese and English require excessive man power.
- Databases of patents, utility models, design, and trademarks require online terminals with Japanese language processing capabilities.

### **(2) Problems of Developing Overseas Distribution Channels (Seven respondents)**

- Negotiation between headquarter in Japan and the overseas service point is very time-consuming.
- Establishment of overseas service point is very difficult. Distribution through overseas agent does not provide expected amount of sales and profits.
- Distribution of Japanese database through gateway services does not provide overseas users' needs. It is necessary to have overseas service point to capture overseas market.
- Single item sales without overseas distribution channels yields many problems.
- The most important aspect of overseas distribution is the establishment of overseas support offices.
- Cases in which sales agents of publications in each area have exclusive rights, sales through online channel is not permitted. It is necessary to reconsider the exclusive sales

agent systems in online environment.

- Japanese office of a large international database service can not intervene the overseas sales activities.

**(3) Problems of User Support (Five respondents)**

- Shortage of manpower with capability of responding overseas inquiry in English, even in written forms.
- Because of time difference and language barriers, it is difficult to respond overseas inquiry by telephone.
- Support for overseas users' is costly.
- Overseas user-training is very difficult.
- Without having confidence in trouble tackling procedure, a respondent feels uneasy for overseas services
- Recruiting staff with language capability will very cost-consuming, which prohibit the provision of overseas services.

**(4) Problems on Telecommunications (Three respondents)**

- Cost of international telecommunications for online database services is still too expensive.
- International telecommunications charge for faximile transmission is too expensive to provide online document delivery overseas through faximile.

**(5) Problems on Pricing and Fee Collecting Procedures**

- Because of the floating of international exchange, pricing of online service based on foreign currency is very difficult, especially when applying fixed rate.
- Difficulties are found in defining the order receiving procedure, including the provision of free demonstration software.
- Procedures for dunning payment of dept and collecting money for overseas customers are difficult to define.

**(6) Problems of 24-hour Operation (Two respondents)**

- Online service hours are limited for customers with large time difference.
- 24-hour online service requires extension of operation hours and dual systems.
- Extended online operation for 24-hour service requires more operational cost.

**(7) Problems in Finding Overseas Users' Needs (Two respondents)**

- A publisher of printed English reports plans to distribute through online or magnetic disks, wondering users' needs, usage patterns, and pricing in overseas market.

- 
- Users' needs should be incorporated for developing databases and services targeted for overseas market.

**(8) Other Problems (Two respondents)**

- It seems difficult to recover the cost of developing and providing database services for overseas market.
- An online service company providing company information databases mentioned the difficulty in answering and explaining overseas inquiries because of the difference in accounting systems.

**(9) Overseas Users Complaints (One respondent)**

- An information broker reported its overseas members' complaints as follows:
  - Location of databases accessible from overseas is unavailable.
  - Few databases made in Japan are accessible in English language.
  - Inquiries from overseas left waiting for long time.
- Overseas user support needs in Japanese language (for Japanese customers living in foreign countries) are quite large, but difficult to provide such a service.

**(10) Requests to Database Related Organizations (One respondent)**

- Developing overseas market and offering Japanese database services overseas require cooperation of not only among database producers but of overseas agents and organizations such as Database Promotion Center, Japan.



This work was subsidized by the Japan Keirin Association  
through its Promotion funds from KEIRN RACE.



Published

by

**Database Promotion Center, Japan**

7th Floor, World Trade Center Bldg., 2-4-1,

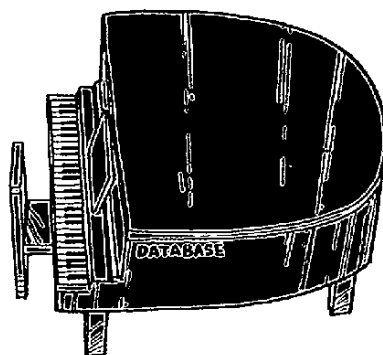
Hamamatsu-cho, Minato-ku, Tokyo 105

TEL: 81-3-3459-8581

FAX: 81-3-3432-7558

©1993

♪♪♪♪♪ DATABASE



**Database Promotion Center, Japan**

7th Floor, World Trade Center Bldg., 2-4-1,

Hamamatsu-cho, Minato-ku, Tokyo 105

TEL: +81-3-3459-8581 FAX: +81-3-3432-7558