

Section 1 Value Generated by Big Data

1. Expanding applications for big data

(1) ICT advances drive the creation, distribution, and accumulation of big data

The soaring volume of digital data in global distribution is predicted to jump from about 1.8 zettabytes (1.8 trillion gigabytes) in 2011 to about 40 zettabytes in 2020. This explosive growth is being driven by increasingly sophisticated networks and devices that have become entrenched worldwide as essential infrastructure for daily living and economic activities. The evolution of ser-

VICES, especially the proliferation of social media and cloud services, is also powering the creation, distribution, and accumulation of enormous amounts of digital data. Furthermore, devices long considered completely unrelated to communications are expected to become entwined with communications and generate massive amounts of data, due to the emergence of wearable devices and other new communication devices and the advancement of M2M and IoT technology.

2. Ascertaining data distribution volumes

(1) Framework for estimates

a. Surveyed entities

Big data, as it is called, includes data that individuals, corporations, governments, and all other economic entities generate through a myriad of means and routes. Vast amounts of structured and unstructured data are generated, the use and application of which is thought to generate new social and economic value. Ideally, we would prefer to ascertain the distribution volumes of all data categorized as big data, but it is implausible to get an accurate measure of all data, especially data generated by individuals. For this survey, we used a wider scope than last year's survey to estimate the traffic volumes of targeted entities and targeted data.

As for the selection of entities to include in the estimates, we calculated the volume of data corporations receive electronically, the same criterion as last year, as corporations are regarded as the primary economic engines that generate social and economic value applying big data.

We selected nine of the 13 industries on the inter-industry table—excluding the agriculture, fishing, and forestry industry, the mining industry, the government services industry, and the unclassified category—and tabulated the necessary data from these industries for the estimates.

b. Surveyed data types

The types of data included in the data distribution volumes estimates for this survey were selected on the basis of whether the required data were obtainable and whether the data are used in economic activities at the corporate level, such as corporate marketing strategies and decision making. A total of 21 data types were included in the estimates: eight structured data types

(customer databases, accounting data, POS data, medical receipt data, log data for e-commerce sales, GPS data, RFID data, and meteorological data) and 13 unstructured data types (business log data, CTI voice log data, fixed IP telephone voice data, mobile phone voice data, email, blogs, SNS, and other article data, access log data, electronic medical records data, image diagnosis data, monitoring and surveillance camera data, sensor log data, traffic and traffic-congestion data, and movie and video viewing logs).

(2) Estimates of corporate data distribution volumes

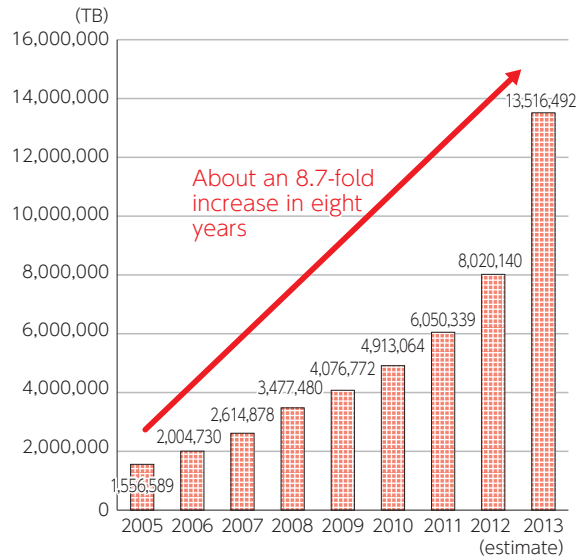
The survey estimated the volume of data distribution in 2013 for 21 types of data in nine industries (service industry, ICT industry, transport industry, real estate industry, finance and insurance industry, wholesale and retail industry, electricity, gas, and water industry, construction industry, and manufacturing industry). The total was estimated to be approximately 13.5 exabytes.

Looking at how data traffic volumes have transitioned finds that data distribution volume has climbed from approximately 1.6 exabytes in 2005 to approximately 13.5 exabytes (estimated) in 2013. Thus, data distribution volume has increased by about 8.7 times (an average annual increase of 27.1 percent) over the eight-year period from 2005 to 2013 (Figure 3-1-2-1).

(3) Analysis of the relationship between data distribution volumes and economic growth

We attempted to verify, using the estimated data distribution volumes by industry, what kind of influence the distribution and use of data by corporations has on Japan's economic performance and whether data distribution contributes to overall real GDP. The economic effects of data distribution volume could not be confirmed

Figure 3-1-2-1 Transitions in data Distribution volumes (total of all surveyed industries)



(Source) "Study Report on Data Distribution Volume Measurements in the Big Data Era," MIC

using the total data distribution volume for all media channels. However, examining data distribution estimates for each media channel found that the channels were divided between those that have positive effects on real GDP and those that do not.

Positive real GDP effects were seen from data distribution volume in longstanding media channels, such as customer data, accounting data, and POS data, and from communication media, such as telephone voice data and

email data. On the other hand, media channels that have gained attention in recent years—sensor data and M2M data—have yet to show measureable real GDP effects.

Sensor, M2M, and other new media channels are expected to have a major impact on Japan's economy, as corporations begin to put these data types to use after trial-and-error iterations and combine them with traditional types of media.

3. State of big data usage at corporations

(1) Framework for estimates

a. Analysis with a survey of corporations

This survey questioned corporations in all industries in order to obtain more inclusive effect measurements. From the results, we ascertained the current state of corporate data usage by industry and by corporation attributes and analyzed the relationship between data usage and business performance and effects. Corporations in the distribution industry, which is thought to lead other industries in data usage, were asked extra questions, and the data usage effects were measured for each type of effect.

(2) Analysis with a survey of corporations

a. Analysis of surveyed corporations in all industries

A. Overview of data usage

Corporations were asked a multiple-answer question about the data types used in their business operations. "Information on customer / trading-partner attributes" was mentioned by over 50 percent of corporations, while "accounting information" and "documentation such as work operation communications or logs" were mentioned by over 40 percent. "Transaction information" received over 30 percent support (Figure 3-1-3-1). Other data types were mentioned by less than 20 percent of the respondent corporations.

Next, respondents were asked about the depth of data

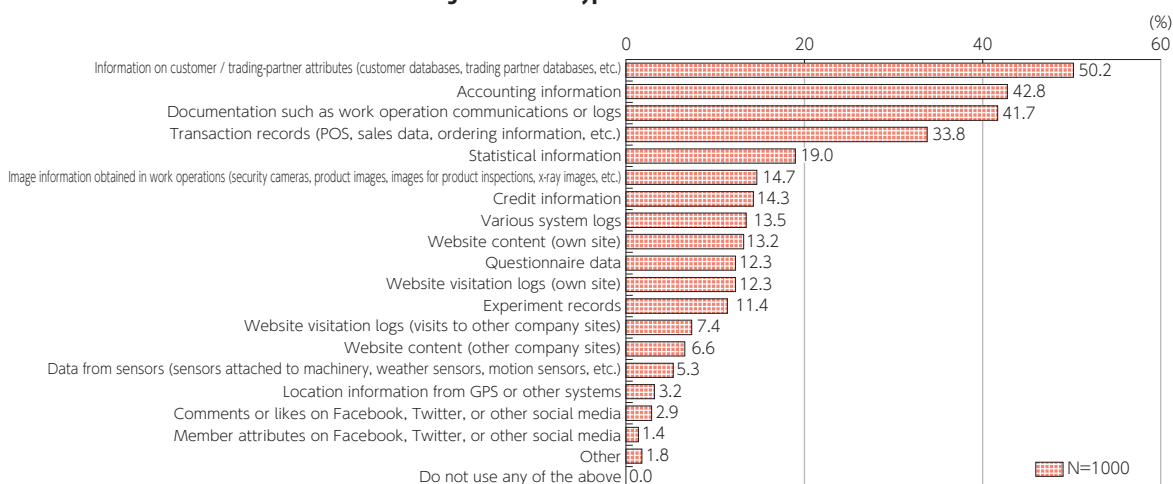
usage in data-driven operations at the respondent's own departmental workplaces. The usage depth was divided into four levels: (1) visualization of operational statuses and the state of the company through data aggregation; (2) dynamic detection of abnormalities through data aggregation; (3) projections of future conditions based on aggregated data; and (4) automatic control of machinery or systems based on future projections. Visualization was overwhelmingly selected. The response rates for other levels were less than 30 percent (Figure 3-1-3-2).

Respondents were asked about issues with data usage. The top replies were "difficult to assess the cost-benefit ratio of data use," "data sets are scattered and difficult or impossible to analyze," "no internal system to analyze and use data," "don't know how to use data," and "costs to analyze and use data" (Figure 3-1-3-3).

B. Benefits gained from data use

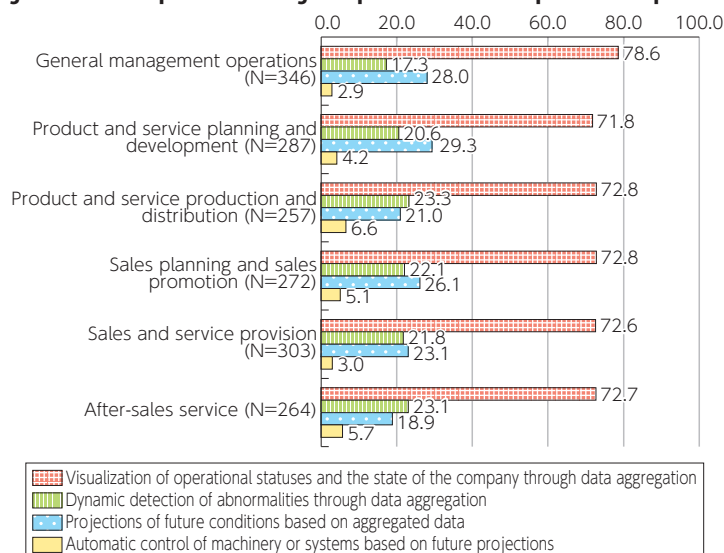
Respondents were asked to give the specific size of benefits gained from data use, as a percentage, in four areas: (1) cost cutting; (2) increased sales; (3) increased added value; and (4) increased customer satisfaction. 61.2 percent said they received benefits in the form of cost cutting, followed in order by increased customer satisfaction, increased sales, and increased added value, all with response rates over 50 percent. The average size of the cost-cutting benefits corporations received was a

Figure 3-1-3-1 Types of data in use



(Source) "Study Report on the Ripple Effects of Operational and Service Innovation through Advanced Data Usage on Japan's Economy and Society," MIC (2014)

Figure 3-1-3-2 Depth of data usage in operations at the respondent's department



(Source) "Study Report on the Ripple Effects of Operational and Service Innovation through Advanced Data Usage on Japan's Economy and Society," MIC (2014)

15.0 percent decrease in costs. The following benefit sizes, in decreasing order, were increased customer satisfaction, increased sales, and increased added value (Figure 3-1-3-4).

C. Estimates of sales increase benefits from data use

Based on this survey's results, the sales increase benefits from data use in industries other than the distribution industry (wholesaling and retail industry) were estimated to be 32.8 trillion yen according to the formula below.

b. Analysis of surveyed corporations in the distribution industry

This survey included more detailed questions about the effects derived from data usage in the distribution industry. The questions asked about the state of data usage in the distribution industry and the resulting quantitative benefits in eight operational areas: (1) develop-

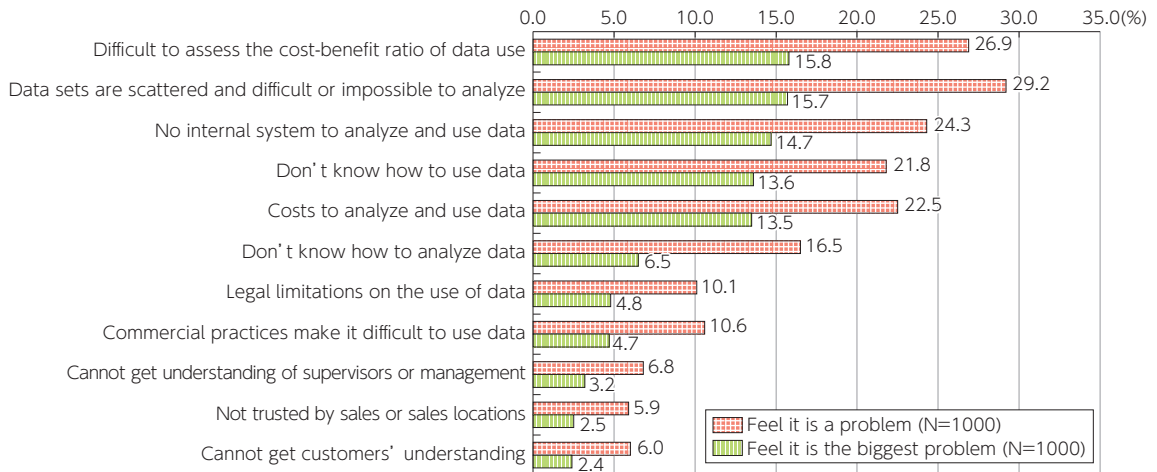
ment of private brand products; (2) product procurement / inventory management; (3) sales promotion; (4) optimization of advertising and marketing; (5) reciprocal customer transfers; (6) optimization of sales floor traffic patterns; (7) analysis of store locations; and (8) other.

A. Overview of data usage

Respondents were asked whether data are used in their workplaces. When asked whether data such as POS data, customer purchase histories, social media postings are used in the eight operational areas given above, product procurement / inventory management, sales promotion, and advertising and marketing operations received the largest affirmative responses rates (Figure 3-1-3-5).

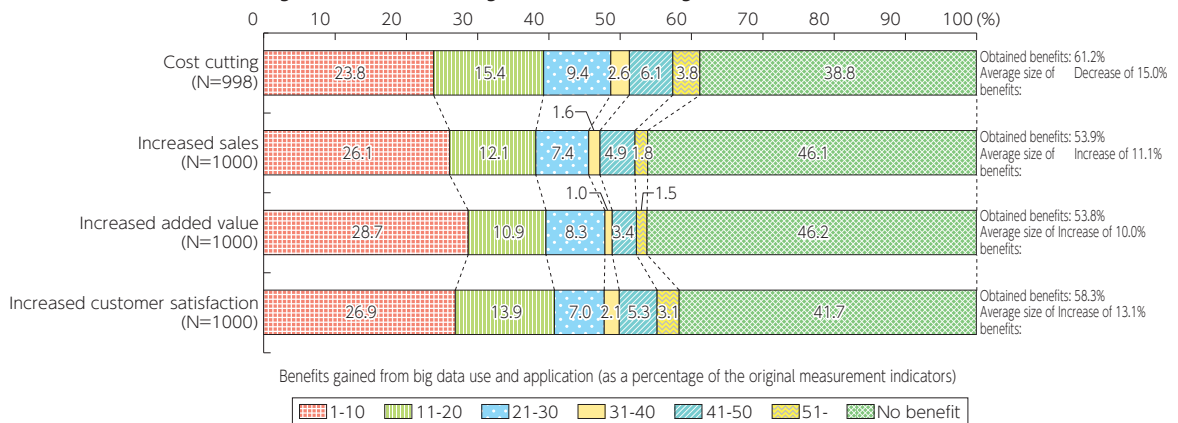
Figure 3-1-3-6 shows the results from the question about issues with data usage given to corporations in the distribution industry. The five most common responses

Figure 3-1-3-3 Data usage issues



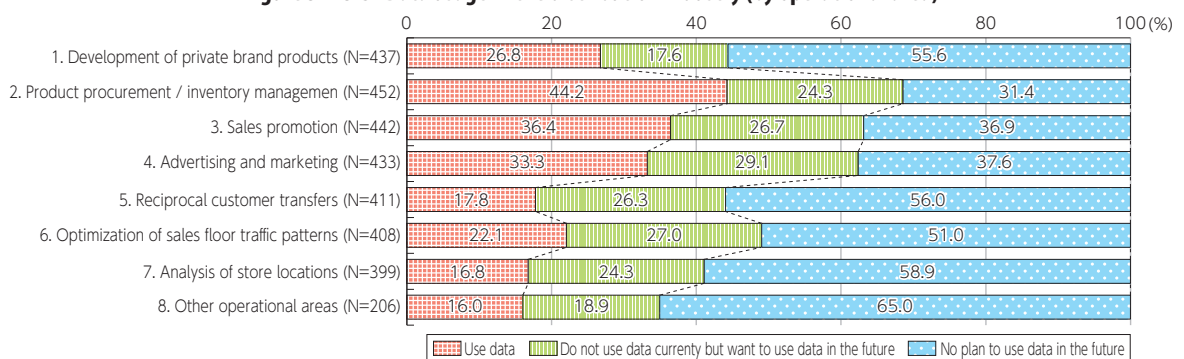
(Source) "Study Report on the Ripple Effects of Operational and Service Innovation through Advanced Data Usage on Japan's Economy and Society," MIC (2014)

Figure 3-1-3-4 Benefits gained from data usage (total of all industries)



(Source) "Study Report on the Ripple Effects of Operational and Service Innovation through Advanced Data Usage on Japan's Economy and Society," MIC (2014)

Figure 3-1-3-5 Data usage in the distribution industry (by operational area)



(Source) "Study Report on the Ripple Effects of Operational and Service Innovation through Advanced Data Usage on Japan's Economy and Society," MIC (2014)

were "don't know how to use data," "no internal system to analyze and use data," "difficult to assess the cost-benefit ratio of data use," "costs to analyze and use data," and "data sets are scattered and difficult or impossible to analyze."

B. Benefits gained from data use

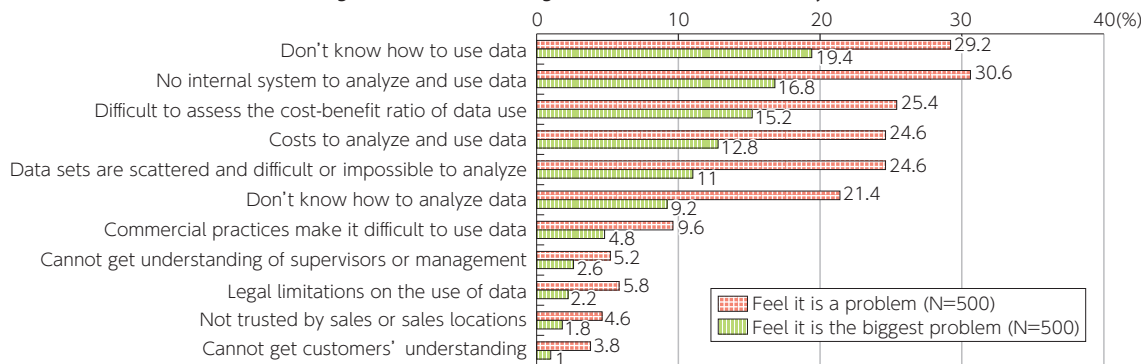
Respondents were next asked to give the specific size of benefits gained from data use, as a percentage, for

each operational area where data sets are used. To ascertain the benefits in more detail than in the questions asked to all industries, the benefit indicators were changed depending on the operational area (Figure 3-1-3-7).

C. Estimates of sales increase benefits from data use

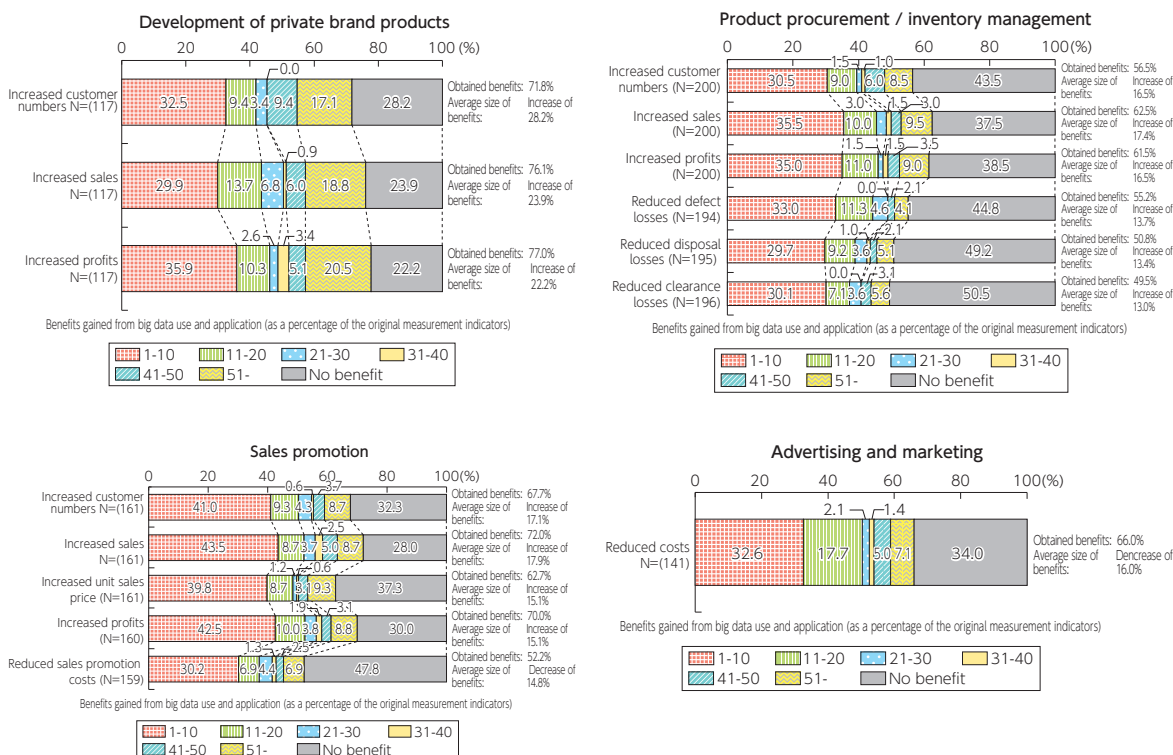
Based on the results to these questions, the sales increase benefits from data use in the distribution indus-

Figure 3-1-3-6 Data usage issues (distribution industry)



(Source) "Study Report on the Ripple Effects of Operational and Service Innovation through Advanced Data Usage on Japan's Economy and Society," MIC (2014)

Figure 3-1-3-7 Benefits gained from data usage (by operational area)



(Source) "Study Report on the Ripple Effects of Operational and Service Innovation through Advanced Data Usage on Japan's Economy and Society," MIC (2014)

try (wholesaling and retail industry) were estimated to be 28.1 trillion yen — 13.0 trillion in the wholesaling industry and 15.1 trillion in the retail industry. The estimated total sales increase benefits in industries outside

the distribution industry were 60.9 trillion yen. This figure is equivalent to 4.6 percent of the total sales in Japan's entire industry (1,335.5 trillion yen).

4. Promoting combined geospatial information and ICT usage

(1) Awareness of applications for geospatial information among local governments

a. State of integrated GIS usage (taken from "Outline of Local Government Information Management," MIC)

Local governments share integrated GIS among taxation bureaus, urban planning bureaus, disaster management bureaus, and other internal sections. Local governments are moving ahead with preparations of the shared spatial data (digital map data that can be shared inter-

nally), including basic map information for more efficient execution of administrative operations, ahead of GIS deployment. The national government provides technical assistance and supplementary financial measures.

According to MIC's Outline of Local Government Information Management (2014) report, as of April 2013, 40.4 percent of prefectural governments, along with 44.8 percent of municipal governments, had introduced inte-

grated GIS. When asked about the application fields for integrated GIS, the top-three responses from prefectural governments were “agriculture and forestry administration” (94.7 percent), “environment” (89.5 percent), and “education” (84.2 percent), while the top-three responses from municipal governments were “roads” (64.4 percent), “property taxes” (63.5 percent), and “fire departments and disaster management” (59.7 percent).

Local governments that indicated they had no plans to introduce integrated GIS were asked about the factors impeding integrated GIS adoption. The most frequently quoted reasons, by both prefectural and municipal governments, were “public financial conditions” and “lacking personnel.”

b. State of GIS usage (taken from a survey of local governments)

Local governments were asked about what fields they hope to expand GIS applications into. As in last year’s survey, disaster management was the No. 1 response by a wide margin, mentioned by over 80 percent of the re-

spondents. This was followed in order by city infrastructure, tourism, healthcare / nursing / social welfare, and crime prevention (Figure 3-1-4-1).

When asked about problems facing expanded GIS use, “tough public financial conditions” was the most common response, given by almost 60 percent of the respondents. As in last year’s survey, this was followed in order by “have not established systems that can be used and shared across divisions,” “lacking promotion systems within government offices,” and “lacking employee skills (operational abilities, analytic and application abilities, etc.) or software / tools to use data” (Figure 3-1-4-2).

(2) MIC initiatives to promote geospatial information-ICT integration

As ICT dramatically changes and evolves, both quantitatively and qualitatively, MIC is looking to bring new innovation to the daily lives of citizens by converging spatial information with ICT. To this end, it launched the

Figure 3-1-4-1 Promising fields for GIS application expansion

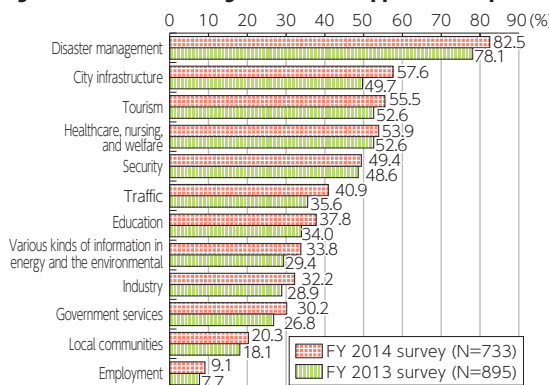
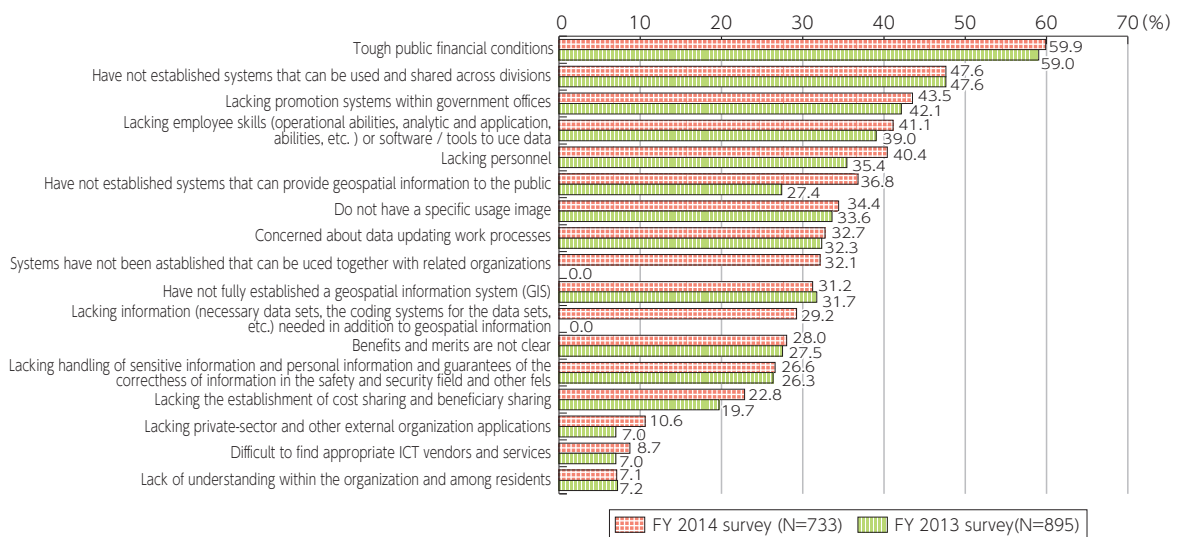


Figure 3-1-4-2 Problems facing expanded GIS use



(Source) “Study Report on the Current State of Regional ICT Application and Use,” MIC (2014)

G-Space x ICT promotion council in March 2013, which conducted a study in this area and compiled a report in June 2013. In its report, the council set out three visions (targets): revitalizing the economy by creating new industries and services, establishing the world's most ad-

vanced disaster management systems, and revitalizing regional communities through advanced and leading models.

Based on the council's report, MIC is now taking on the G-Space x ICT Project.

Section 2 Promoting the Use of Open Data

1. Open data initiatives by the Japanese government

(1) IT Strategic Headquarters initiatives

The IT Strategic Headquarters released the Open Government Data Strategy in July 2012 as an open data strategy for the Japanese government. To study specific policies and measures based on the Open Government Data Strategy, the IT Strategic Headquarters set up the e-Government Open Data Executive Meeting. This meeting is moving ahead with examinations of basic matters including (1) the establishment of the necessary rules and regulations to make use of public data, (2) the preparation of data catalogs, and (3) the creation of standards for data formats and structures.

On a related note, the Declaration to be the World's Most Advanced IT Nation states three measures to advance private sector access to public data (open data): (1) prepare and release a roadmap based on the Open Government Data Strategy; (2) review usage rules that permit the unrestricted secondary use of public data starting in FY 2013 and widen the release of public data in international standard machine-readable data formats; and (3) launch a trial version during FY 2013 of a data catalog site that provides guidance to and enables cross-sectional searching of public data released by ministries and agencies and begin full-scale operation of the site in FY 2014.

The G8 Summit in June 2013 adopted the G8 Open Data Charter and Technical Annex. In response to this policy paper, the Ministry CIO Liaison Committee, at its October 2013 meeting, agreed on Japan's Open Data Charter Action Plan. On December 20, 2013, the Cabinet Secretariat launched a trial version of the data catalog site, DATA.GO.JP.

(2) Open Data Promotion Consortium initiatives

The Open Data Promotion Consortium was formed on July 27, 2012 with the objective of industry, government, and academia coming together to lay the groundwork for the realization of an environment conducive to open data distribution. The consortium is currently disseminating information on the significance and potential of open data along with examining technical specifications and secondary use rules for open data. It is also looking at approaches to licensing needed to implement open data schemes.

In addition, the consortium has created a common collaborative platform API for information distribution with the aim, by specifying construction methods, of simplifying the construction of applications and servers to register and use open data. The results of a pilot pro-

gram are now being scrutinized ahead of a future revision to the API. It is also preparing to release the Open Data Guide (Version 1) that will summarize the necessary technical matters and knowledge pertaining to usage rules when converting public data held by organizations to open data.

The consortium also carries out various activities to develop and proliferate open data.

(3) MIC initiatives

MIC is working to build an environment conducive to open data circulation by (1) formulating a common collaborative platform API for information distribution and translating it into an international standard, (2) enacting rules on secondary data use, and (3) carrying out starting in FY 2014 demonstration tests to make visible the merits of open data. MIC has made a public request for the development of applications that use public data converted to open data during FY 2013 demonstration tests in order to encourage the private sector to make use of public data. And it joined with the Ministry of Economy, Trade and Industry to hold an Open Data Use Case Contest and to develop ideas and applications that utilize public data to resolve various social issues.

Furthermore, as a test case of converting information held by administration bodies to open data, MIC released the Information and Communications in Japan White Paper / Information and Communications Statistics databases as open data on April 19, 2013. And MIC's Statistics Bureau, a core government statistics organization, in partnership with the National Statistics Center, is updating its provision methods of enormous and diverse statistical data records for the next generation, making efforts to enable sophisticated data usage, and spearheading government initiatives to be a top runner in promoting open data.

2. Awareness of open data among local governments and private corporations

(1) Awareness among local governments

a. State of open data initiatives

Questions about the state of open data initiatives by local governments, divided by prefectures, cities and special zones, and municipalities, show that a high percentage of prefectures are moving ahead with initiatives while initiatives by cities, special zones, and municipalities are still forthcoming. This state of affairs is unchanged from last year's survey, but more cities, special zones, and municipalities answered they are "already moving ahead with initiatives" or "examining specific ways to move ahead with initiatives" this year than last year. Noteworthy is that 27.4 percent of cities and special zones and 50.0 percent of municipalities answered, "not interested and not undertaking any initiatives," a decline from the percentages in last year's survey (Figure 3-2-2-1).

b. Provided data types

Next, the survey asked local governments already undertaking open data initiatives what data types they provide. The No. 1 response was survey and statistical data

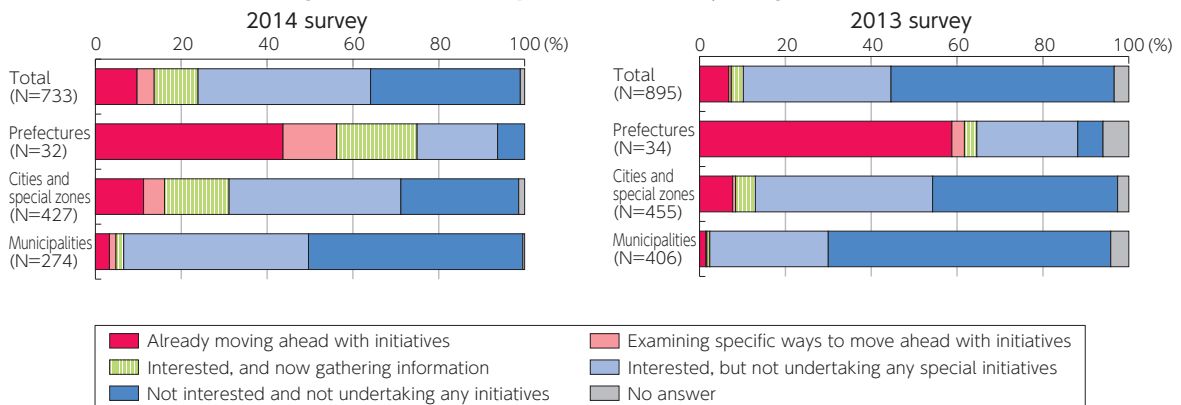
sets and the No. 2 response was information on government services and resident services, the same as last year's survey. However, disaster-management and related information moved up to third place with a 42.3 percent response rate from fifth place (29.5 percent) last year. Response rates also rose for provision of information on education and public transportation (Figure 3-2-2).

Local governments undertaking open data initiatives and local governments considering moving toward taking initiatives were asked what types of public data they were considering for provision. The top response was survey and statistical data sets, followed in order by disaster-management and related information, tourism and related information, map, topography, and geological feature information, and information on public facilities (Figure 3-2-2-3).

c. Issues in promoting open data

Finally, local governments were asked about high-priority issues in the promotion of open data initiatives. No significant differences were seen in the response

Figure 3-2-2-1 State of open data initiatives by local governments



(Source) "Study Report on the Current State of Regional ICT Application and Use," MIC (2014)

Figure 3-2-2-2 Public data currently provided

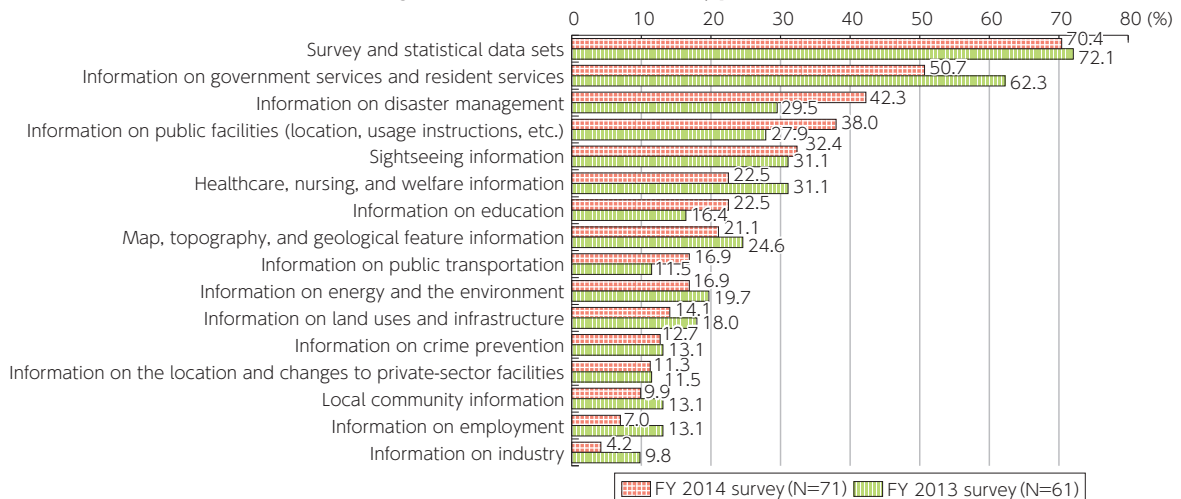
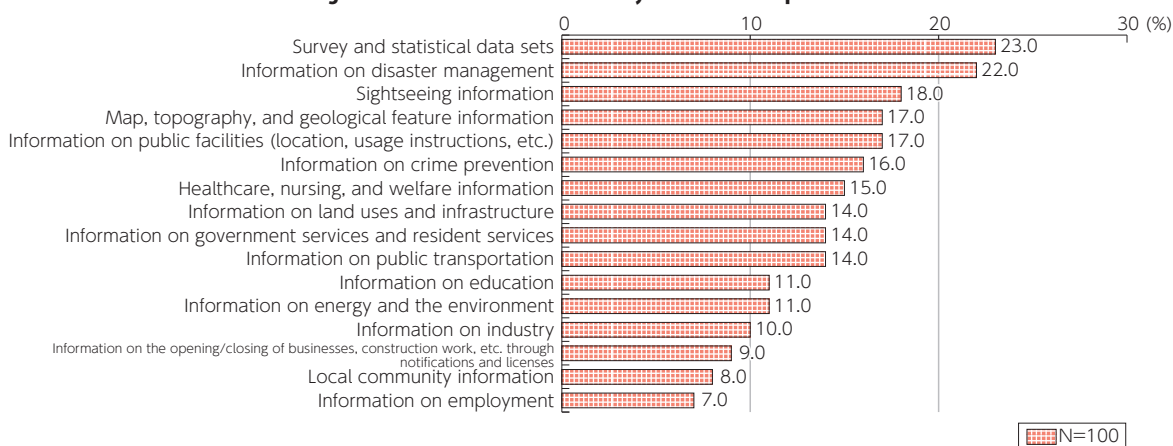
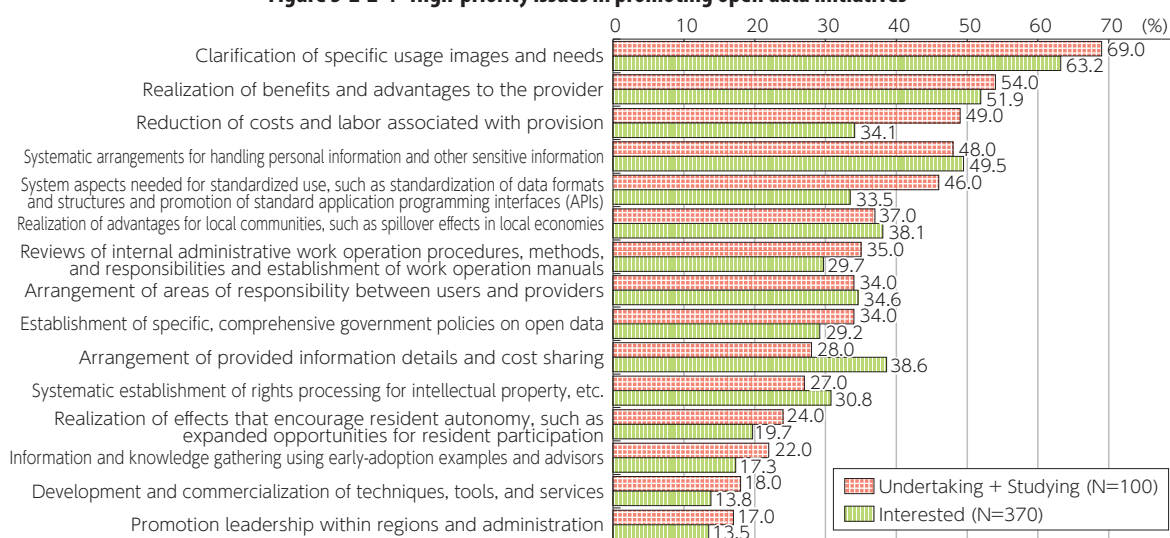


Figure 3-2-2-3 Public Data currently considered for provision



(Source) "Study Report on the Current State of Regional ICT Application and Use," MIC (2014)

Figure 3-2-2-4 High-priority issues in promoting open data initiatives



(Source) "Study Report on the Current State of Regional ICT Application and Use," MIC (2014)

tendencies between local governments that are already taking open data initiatives or considering open data initiatives and local governments interested in open data (Figure 3-2-2-4).

(2) Open data needs among private corporations

Private corporations were asked what types of public data they want to use. The top response, given by 59 corporations, was maps and underground data, followed in order by public transportation (43 responses), disaster management, security, and safety (38 responses), and city planning and construction (35 responses) (Figure 3-2-2-5).

Next, private corporations were asked which organizations held the public data they want to use. The top response, given by 122 corporations, was local governments, followed in order by the Ministry of Land, Infrastructure, Transport and Tourism (116 responses), MIC (54 responses), independent government agencies (35 responses), and the Ministry of Health, Labour and Welfare (34 responses) (Figure 3-2-2-6).

Figure 3-2-2-7 indicates the responses of private corporations when asked what types of public data held by

local governments they want to use. Maps and underground data was the top response, at 16 percent, followed by public transportation, individual / resident information, and city planning and construction, all at 13 percent.

Figure 3-2-2-5 Types of public data most needed

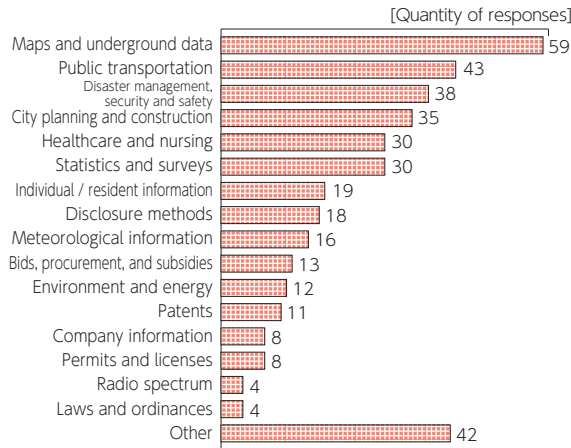
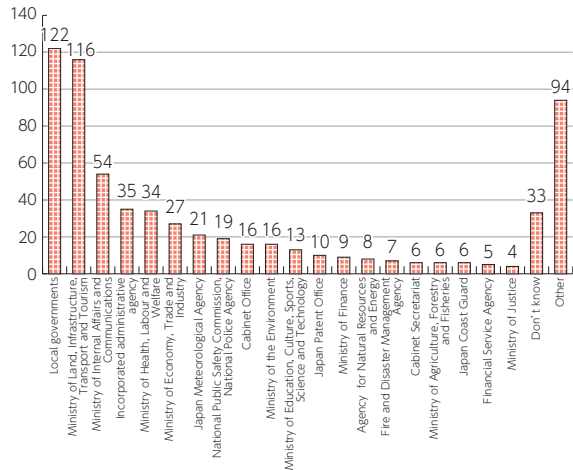
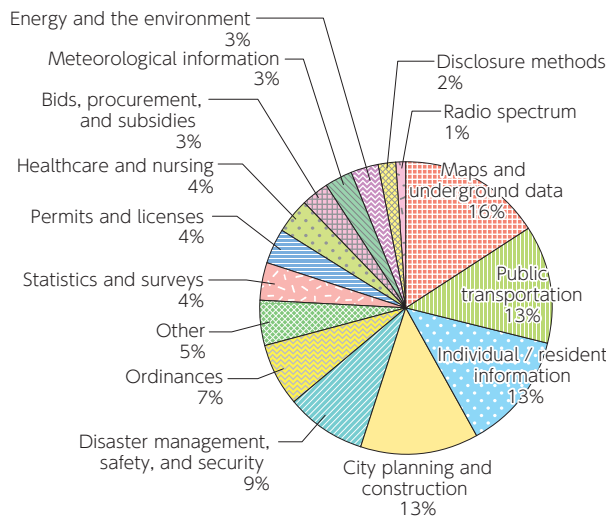


Figure 3-2-2-6 Institutions holding public data most needed



(Source) "Study Report on Industry Use of Public Data," Keidanren (March 19, 2013)

Figure 3-2-2-7 Breakdown of desired data types (held by local governments)



(Source) "Study Report on Industry Use of Public Data," Keidanren (March 19, 2013)

Section 3 Harmonious Use and Distribution of Personal Data

1. Trends in the usage and distribution of personal data

(1) Treatment of personal data in the big data era

Today, entities both in the public and private sector routinely create and distribute big data over networks. Some of these distributed data sets contain personal data as well. In the past, our country's rules on the use and application of personal data have been somewhat vague, causing some businesses to hesitate to use big data. Over time, however, new industries and new services around the world have become more active with the use of big data, and a succession of companies are embarking on testing and launching services that use personal data as companies have become more familiar with using and applying data.

(2) Government movements pertaining to the domestic use and distribution of personal data

In the wake of the Declaration to be the World's Most

Advanced IT Nation, decided by the Cabinet in June 2013, the IT Strategic Headquarters, in June 2013, set up the Study Committee on Personal Data, which examined (1) defining basic frameworks for the use and application of personal data, (2) approaches to rules on the use and application of personal data, (3) approaches to mechanisms to ensure the effective functioning of personal data protection, and (4) organizing ideas on the establishment of independent third-party organizations. On December 20, 2013, the IT Strategic Headquarters released the Policy on Revisions to the Use and Application of Personal Data.

The IT Strategic Headquarters continued to examine a detailed system plan based on this policy and on June 24, 2014, released the Policy Outline of the Institutional Revision for Utilization of Personal Data. The IT Strategic Headquarters has started work on drafting a related

bill through a public comment process and plans to submit the related bill to the National Diet as soon as possible after January 2015.

ble after January 2015.

2. User attitudes on the use of their personal data

(1) Attitudes on the privacy of personal data

The current Act on the Protection of Personal Information defines personal information that should be protected as any personally identifiable information. As this definition ranges from information that is normally public, such as names, to information that people do not want known publicly, different degrees of privacy are thought to apply. Furthermore, the degree of privacy is thought to vary depending on the circumstances and situations where the personal data are used.

Users were asked to rate how private 37 different types of personal information are to them. The results are collected in Figure 3-3-2-1.

From the figures above we know many users tend to feel a strong sense of privacy toward data that allow direct access to the individual, such as name, address, email address, and telephone number. Many users also tend to feel a particularly strong sense of privacy toward financial and credit information, such as bank account information and credit card numbers, and authentication information, such as personal ID numbers and bio-

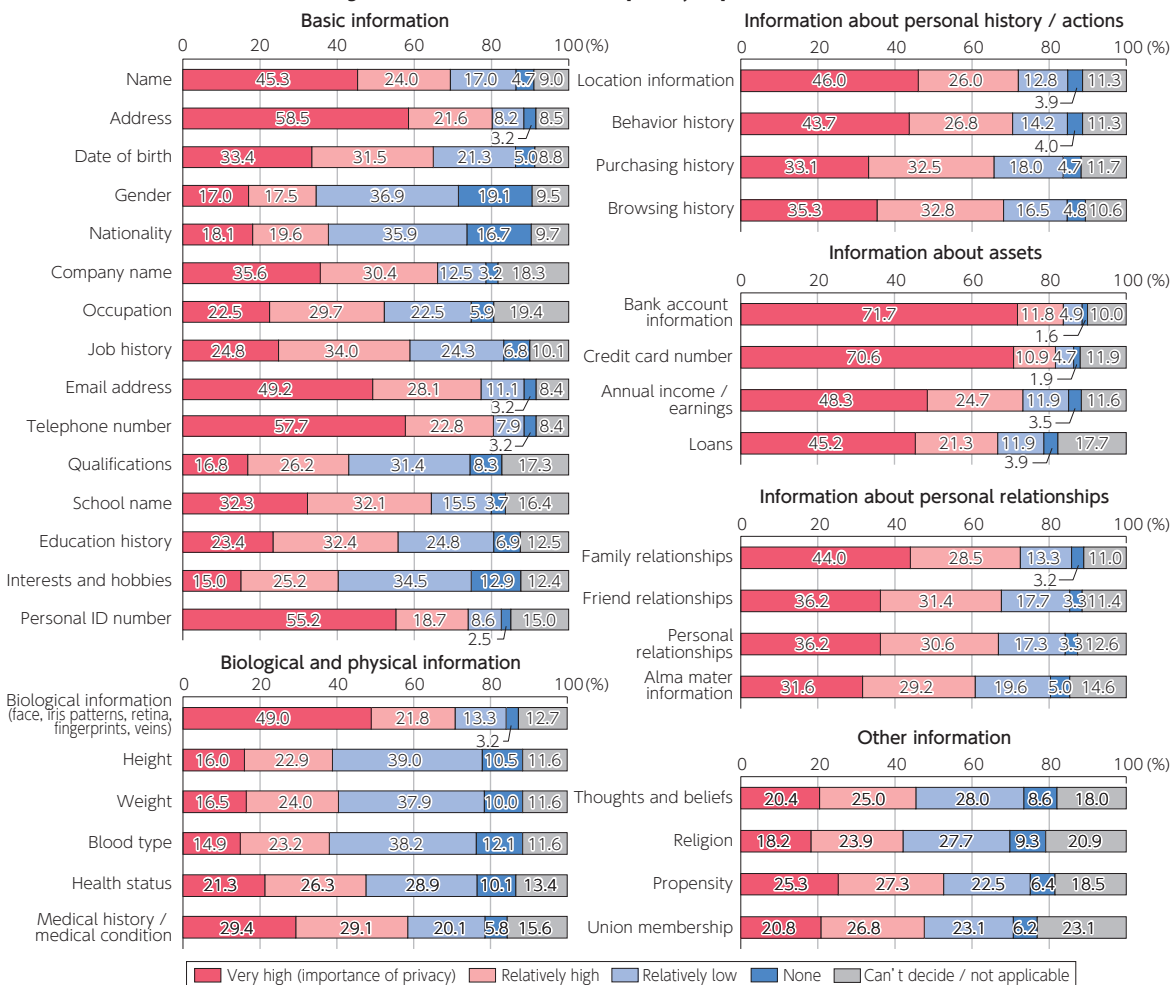
logical information.

(2) User attitudes on important aspects to them when providing data

Users were asked what aspects they view as important when they, as service users, provide their personal data to a service provider (public institutions or private companies). The top aspect viewed as most important was “obtain proper consent,” given by 35.5 percent of the respondents. This was followed in order by “proper information handling methods” (17.5 percent) and “type of information provided” (17.4 percent) (Figure 3-3-2-2).

Users were also asked what information given by a service provider they view as important when the service provider seeks their consent, as a service user, to use information related to them. The top response was “purpose of using information” (57.0 percent), followed in order by “whether information is sent externally / provided to third parties” (44.6 percent) and “details of collected information” (41.7 percent) (Figure 3-3-2-3).

Figure 3-3-2-1 Attitudes on the privacy of personal data



(Source) "Study Report on the Social Impacts of ICT Advancement," MIC (2014)



Figure 3-3-2-2 Important aspects when providing data

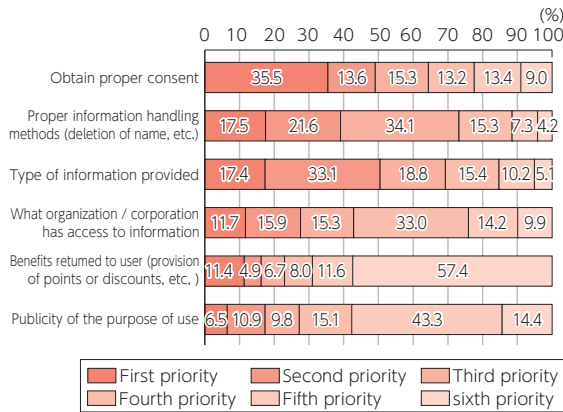
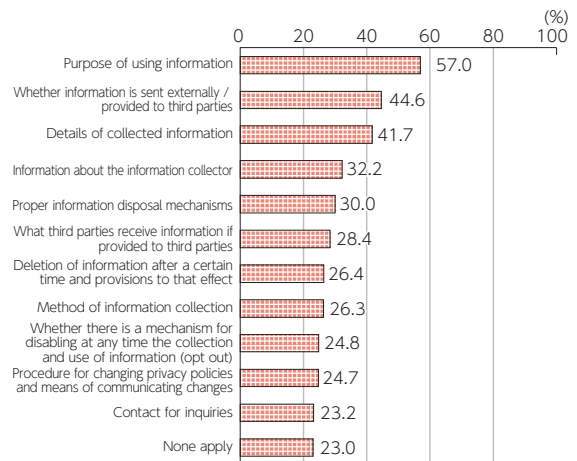


Figure 3-3-2-3 Important information when consenting to providing data



(Source) "Study Report on the Social Impacts of ICT Advancement," MIC (2014)

(3) User attitudes on purposes for using personal data

a. Organizations to whom it is acceptable to provide data

Users were first asked whether they would provide personal data about themselves to a number of different organizations, assuming proper consent were obtained. The envisioned purposes of use were broadly divided into public purposes and business purposes (Figure 3-3-2-4).

When the envisioned use was for a public purpose, "national government," selected by 29.8 percent of respondents, was the most frequently mentioned organization that it was acceptable to provide personal data to. This was followed in order by "local governments" (24.2 percent) and "hospitals" (19.0 percent).

When the envisioned use was for a business purpose, "large corporations with a public nature (lifeline-type corporations)," selected by 12.4 percent of respondents, was the most frequently mentioned organization that it was acceptable to provide personal data to. This was followed by "large corporations with a public nature (transport-related corporations)" with 11.8 percent support. On the other hand, more than half of the respondents answered "will not provide personal data under any circumstances" to "other ordinary corporations (that you will not provide personal data under any circumstances)" to "other ordinary corporations (that you have not heard of)"

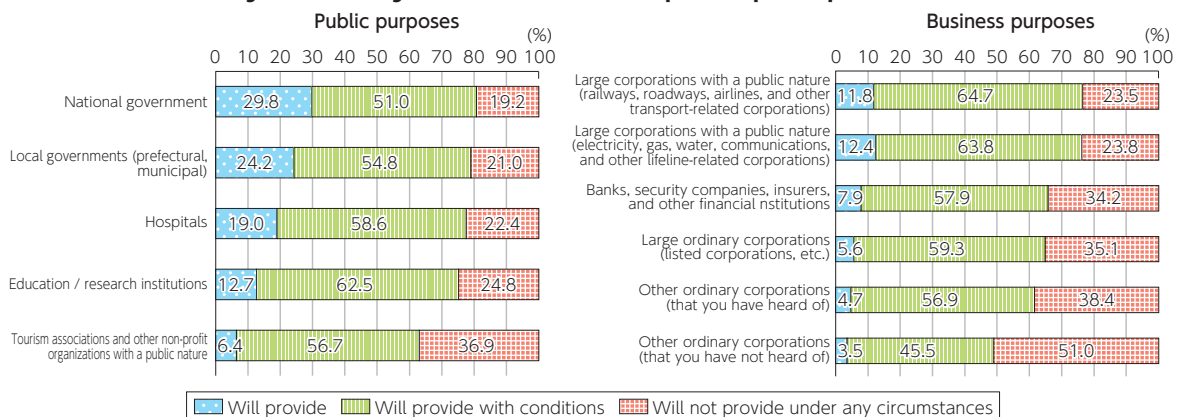
have not heard of)," which indicates the willingness to provide personal data varies substantially depending on familiarity with the organization.

b. Situations where it is acceptable to provide personal data (by purpose of use)

Next, users were asked whether they would provide personal data about themselves for a number of different purposes, assuming proper consent were obtained. When the envisioned use was for a public purpose, "in large natural disasters or other emergencies," selected by 45.5 percent of respondents, was the most frequently mentioned situation where it is acceptable to provide personal data. This was followed in order by "for disaster-management purposes" (33.6 percent), "for the health and welfare of citizens" (26.4 percent), and "for the protection of national security or safety of citizens" (25.3 percent).

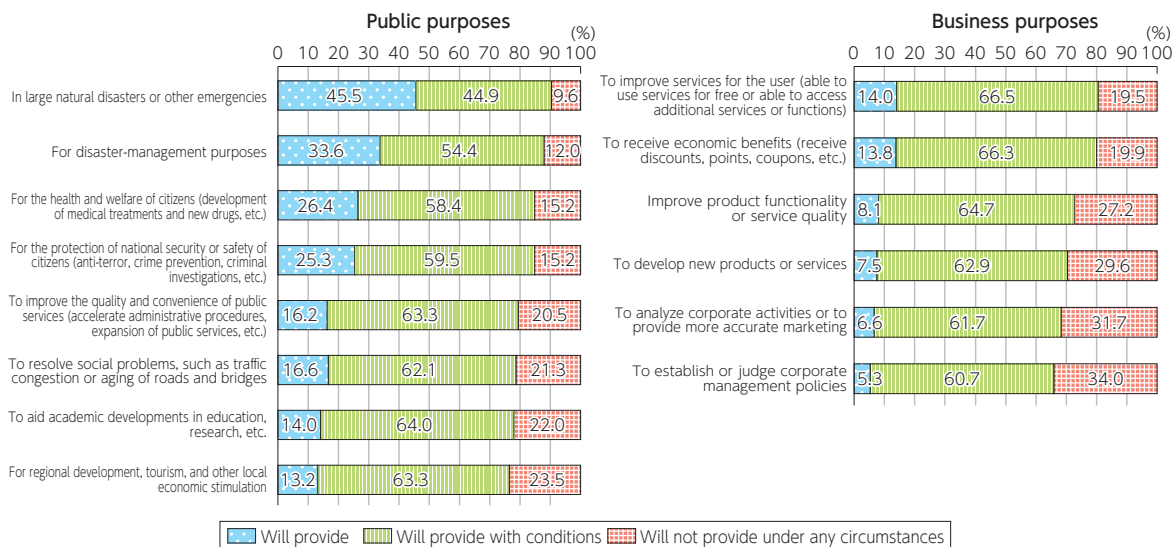
On the other hand, when the envisioned use was for a business purpose, 14.0 percent of respondents agreed it was acceptable to provide personal information "to improve services for the user" and 13.8 percent agreed with "to receive personal economic benefits" (Figure 3-3-2-5).

Figure 3-3-2-4 Organizations to whom it is acceptable to provide personal data



(Source) "Study Report on the Social Impacts of ICT Advancement," MIC (2014)

Figure 3-3-2-5 Situations where it is acceptable to provide personal data (by purpose of use)



(Source) "Study Report on the Social Impacts of ICT Advancement," MIC (2014)

Section 4 Advent of a Real Data-Driven Society

1. Signs of changes in data usage

A succession of data usage examples are appearing in many disparate fields due to the improved performance and lower prices of various devices and sensor technologies, which are being driven by advances in ICT. Concurrent with this, data usage in many industries and fields is being pushed by the construction of environments that link all sort of things around us together, which is being driven by M2M and IoT technologies.

Conversely, most analysis using data to date has been to "visualize" operational statuses or the state of the company by collecting and aggregating various data sets distributed among various internal sections of a company. Nevertheless, some corporations answered that they obtaining benefits by further deepening their data usage.

In addition, corporations have mainly performed data analyses using internal corporate or internal organization data sets only. But there is every reason to believe there will be increased efforts to obtain new insight by

using external data sets and contrasting them with internal data sets. And the external data sets getting the most attention are public data sets held by government bodies. As much as corporations have high hopes for open data, open data initiatives are important for governments too, from the viewpoints of improving transparency and credibility, encouraging public-private cooperation, and making administration more efficient. For these reasons, the pace of open data initiatives is expected to accelerate further.

Data that users communicate via social media and elsewhere are also likely to be used as important data resources in conceiving management strategies and developing product and service plans. These trends, taken together, will probably accentuate the infrastructure-like nature of data, as data sets transcend the limitations of being management resources belonging to a single corporation or organization and are shared throughout society.

2. Issues complicating data usage advancement

The advancement of data usage, however, is not free of problems. The most commonly acknowledged across-the-board issues are the handling of personal data and securing specialized data personnel.

For the corporations and other organizations engaged in data usage, the higher the value of data they obtain and analyze, the greater the received benefits. From this standpoint, then, if data directly tied to users can be used, it will be possible to directly ascertain the user's attitudes and tendencies, which is valuable to corporations and other organizations. On the flip side, for consumers, this creates concerns about violations of their

privacy and misuse and abuse of their personal information by third parties. A key issue is how to strike the right balance between the usage and protection of personal data.

It is important, in order to obtain more value from data usage, for corporations and other organizations to secure personnel who can derive beneficial insights from processed data and who can apply these insights to resolve issues at the corporation / organization. It is said, particularly in Japan, that there are insufficient numbers of these specialized personnel. To be fair, different corporations require different levels of data usage



Part 1

sophistication, and it is possible in some cases to obtain sufficient insights needed for operations without specialized personnel. Still, a critical issue is how to secure, ei-

ther internally or through outsourcing, personnel who can shoulder such operations.