

Section 1 Lifestyle and Work Style Transformations Caused by ICT Advancement

1. Lifestyle transformations caused by ICT advancements

Smartphones and tablets have rapidly spread through and penetrated the Japanese market in the few years since their introduction. According to the Communications Usage Trend Survey, the smartphone household penetration rate crossed 60 percent at the end of 2013, by which time tablets had reached a 20 percent household penetration rate.

Expectations are that smartphones and tablets will continue to proliferate in Japan and elsewhere in the world. The use of SNS and similar services is anticipated to escalate in step with smartphone and tablet growth. As a result, our lifestyles are likely transform as well.

This section analyzes what sort of transformations will occur in tandem with the widening growth of smartphones and other devices. Our analysis is based on the results of an international Web survey conducted in six countries (Japan, the United States, the United Kingdom, France, South Korea, and Singapore).

(1) Changes in ICT usage environments

a. Proliferation of smartphones and other mobile devices

The survey respondents were first asked about personal ownership of popular ICT devices. The penetration rate of PCs was high, at around the 90 percent level, in all six countries. The ownership rate of smartphones in Japan, as mentioned above, was over 50 percent, but the smartphone penetration rate was higher in the other five countries, ranging from 70 to 90 percent. Around 70 percent of American and French respondents own smartphones, while smartphone ownership was around 90 percent in South Korea and Singapore.

Feature phone ownership in Japan was distinctly dif-

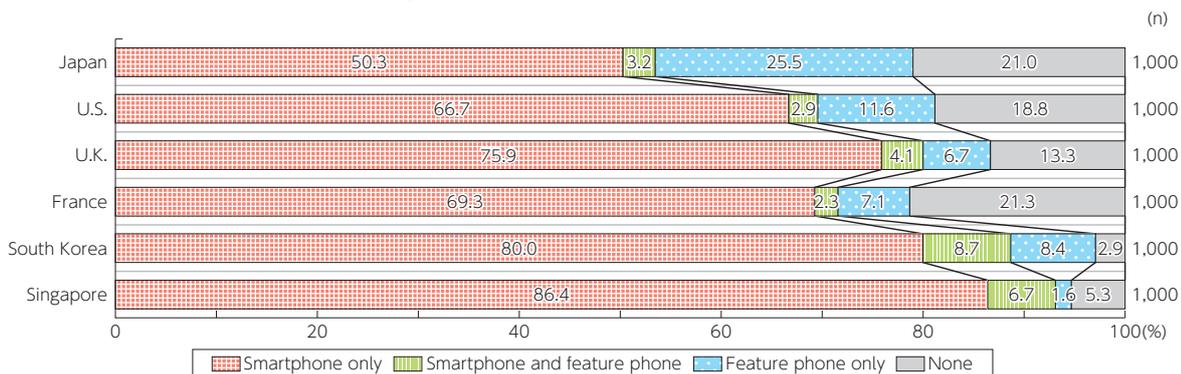
ferent from that in the other countries, with just under 30 percent of respondents either owning just a feature phone or a feature phone in addition to a smartphone (Figure 4-1-1-1).

b. Changes in mobile and other data communication networks

The shift to smartphones has made it easier to view rich content, such as pictures and videos, and the conditions around mobile data networks, in particular, have been transformed. In Japan, the migration from feature phones to smartphones coincided with the move from 3G to LTE, and now LTE user numbers are mushrooming (see Chapter 5). The results of the international Web survey reveal that mobile networks are progressing toward higher speeds in all countries, with LTE users already surpassing 3G users in Japan, where about 40 percent of smartphone users use LTE networks, and in South Korea, which has the highest LTE penetration rate, over 60 percent, and with LTE rates climbing to the 30 percent level in Singapore and the United States (Figure 4-1-1-2).

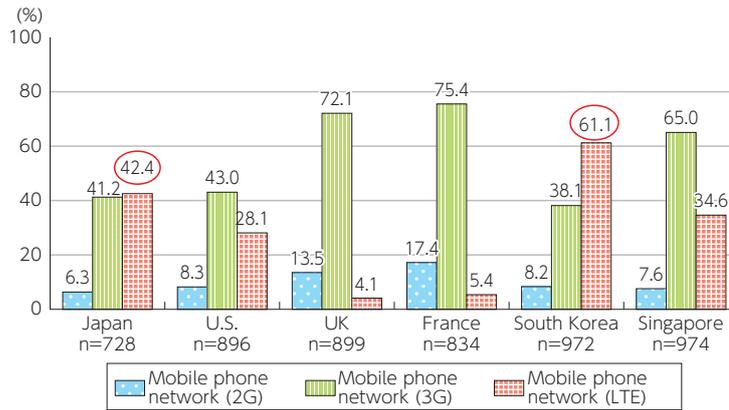
Smartphone users were also asked which device they most frequently use. The combined percentage of smartphone and tablet users was over 30 percent in every country. More than half of smartphone users are smartphone-first users in Japan, South Korea, and Singapore, which are countries where LTE growth is particularly advanced. These results demonstrate that smartphones are becoming the primary ICT device, particularly in these countries.

Figure 4-1-1-1 Smartphone ownership rates



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

Figure 4-1-1-2 Percentage of users by type of mobile data network



Note: Results for High-speed wireless communications (BWA, WiMAX, etc.), other, and none of the above are not shown.

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

c. Changes in device usage times

Examining the average daily time spent on mobile phones, PCs, tablets, TVs, and other devices shows that TVs and PCs have the longest usage times, in the vicinity of two to three hours per day, in all six countries. The usage times for TVs and PCs are longest in the United States, at close to three hours each, and a similar tendency is seen in the United Kingdom. On the other hand, no major differences were seen among the six countries in "time reading paper newspapers and magazines" and "time reading paper books," which did not reach 50 minutes on average.

A distinct difference was seen, however, in Japan in the usage times of mobile phones between smartphone owners and non-smartphone owners. The former use mobile phones on average 78 minutes a day—which is on a par with the United States, South Korea, and Singapore—while the latter only 12 minutes, a difference of over one hour. A gap was also seen in PC usage times at home; smartphone owners use PCs on average 115 minutes a day, about 50 minutes less than the 166 minutes of non-owners. This finding indicates that smartphones are gradually replacing PCs as the device of choice.

(2) Changes in content and service usage

a. Smartphones and other devices fuel greater use of services

When we examined the use of various content and services on mobile phones and tablets in the six countries, we discovered smartphone owners in Japan had markedly higher usage rates than feature phone owners for all content and service types. This was particularly true for usage rates of "SNS," "Internet shopping / auctions," "chat," "social games," and "watching videos," which were used by less than 20 percent of feature phone owners but were used by between 40 and 60 percent of smartphone owners. This implies that the use of these services, which are seldom used on feature phones, has become commonplace in the mobile marketplace because of smartphones.

Content and service usage on tablets is similar to that on smartphones in all the countries apart from Singapore. The one significant difference is the higher e-book

usage rate on tablets than on smartphones in all six countries (Figure 4-1-1-3).

Figure 4-1-1-4 further illustrates the differences in content and service usage between smartphone users and feature phone users in Japan, focusing on SNS, watching videos, and e-commerce (Internet shopping and auctions).

As these results show, smartphone users are more likely to make use of various content and service types. However, when given five options for the "main purpose of using the Internet"—"communication," "gather information / use content," "online gaming," "shopping," and "other"—21.1 percent of Japanese smartphone users answered "communication," versus just 6 percent of non-owners, making this the top purpose, followed by "gather information / use content." This demonstrates that smartphone users put a priority on communication as a purpose of using the Internet.

b. Changes in service usage frequency

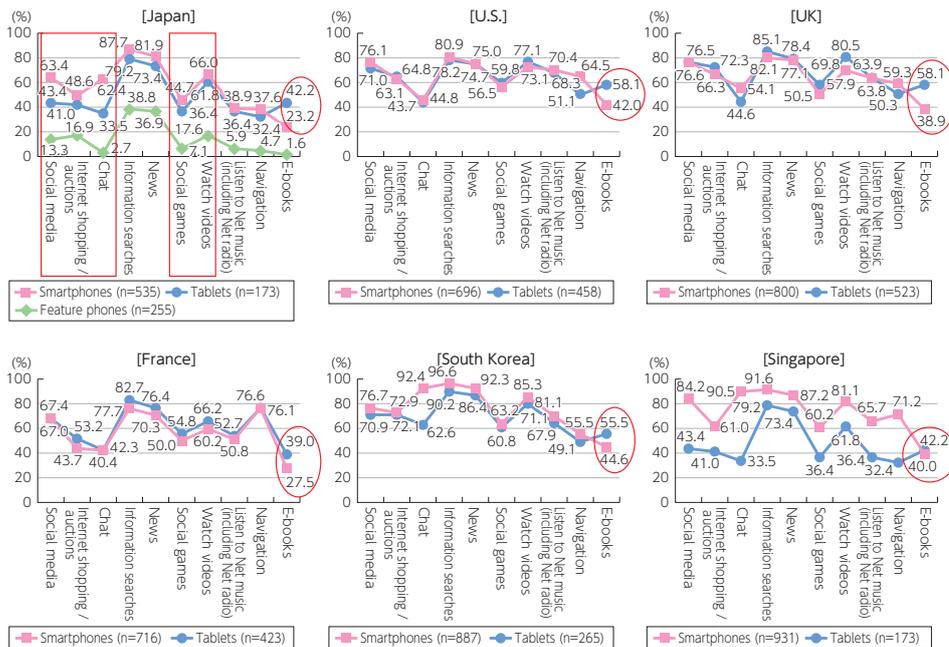
We examined how often users in each country currently use voice calls, email, and SMS communication services on their mobile phone (smartphone or feature phone). One finding in Japan that stood out was that over 90 percent of users use their mobile carrier's email service, which was far and away the highest percentage among the six countries.

(i) Changes in the usage frequency of voice calls and SMS services

We focused our attention on possible service migration from SMS and email to chat apps (such as Line), from voice calls to free app calls, and from mobile carriers' email services to Gmail and similar email services. Among free app calls and chat apps, Line leads the market in Japan and has grown its user base, mostly among young people, achieving over 50 million users in April 2014. In most of the other countries as well, one dominant chat app has taken a majority share of the market.

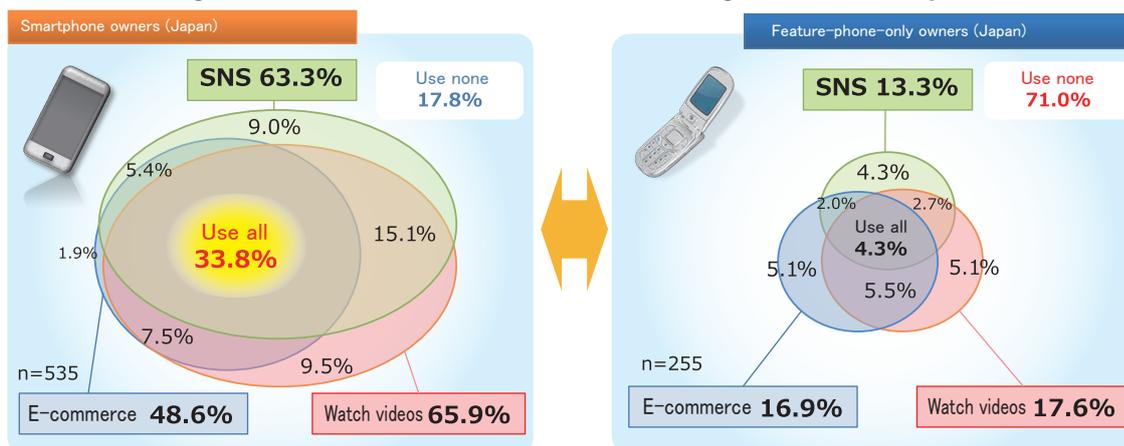
To trace service migration in the area of voice calls, we compared changes in the usage frequency of free app calls versus that of voice calls after a smartphone purchase. In Japan, the percentages of "increased" and "de-

Figure 4-1-3 Use of services on smartphones and tablets



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

Figure 4-1-4 Differences in the use of SNS, video-watching, and e-commerce (Japan)



Note: Smartphone owners include people who own both a smartphone and a feature phone. Usage rates reflect users who used the corresponding service at least once a month. (Size of circles does not reflect the actual figures.)

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

creased" answers were roughly even for use of "voice calls (excluding free app calls)." Of note was that almost 36 percent of users said their use of "voice calls (Skype, WhatsApp, Line, and other free app calls)" increased after purchasing a smartphone (Figure 4-1-1-5).

When SMS and chat were compared, less than 20 percent of users in Japan said their usage of SMS increased and around 30 percent gave the same answer in South Korea and Singapore. This percentage rose to around 40 percent in the three Western countries. Furthermore, the percentage of users who said their SMS usage fell was noticeably higher in South Korea and Singapore, at over 30 percent, than the other four countries (Figure 4-1-1-6).

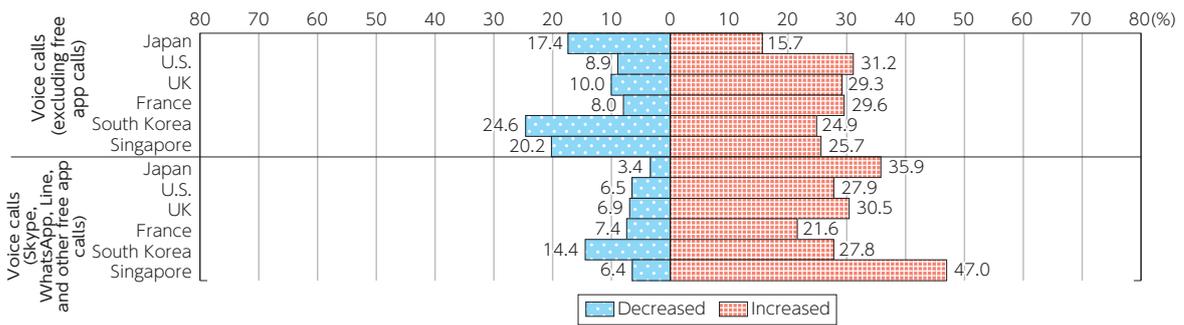
(ii) Changes in Internet service and content usage

A. Frequency of SNS usage

According to the Communications Usage Trend Survey, the smartphone has become far and away the device of choice in Japan when using social media services, with 77.2 percent of users using social media on a smartphone, versus 43.6 percent on a PC and 12.0 percent on a mobile phone (including PHS handsets).

Examining changes in social media usage frequency after a smartphone purchase shows that "increased" answers eclipsed "decreased" answers by a wide margin in all six countries. In Japan, for example, about 35 percent of users said their usage of "SNS (Facebook, Twitter, Google+, etc.)" increased after purchasing a smartphone (Figure 4-1-1-7).

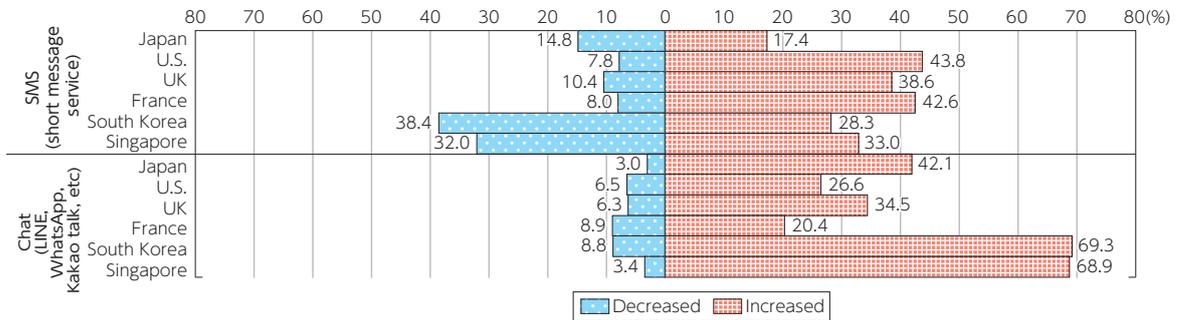
Figure 4-1-1-5 Changes in service usage frequency after a smartphone purchase (free app voice calls versus voice calls)



Note: Samples sizes were N = 535 in Japan, N = 696 in the United States, N = 800 in the United Kingdom, N = 716 in France, N = 887 in South Korea, and N = 931 in Singapore

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

Figure 4-1-1-6 Changes in service usage frequency after a smartphone purchase (SMS versus chat)



Note: Samples sizes were N = 535 in Japan, N = 696 in the United States, N = 800 in the United Kingdom, N = 716 in France, N = 887 in South Korea, and N = 931 in Singapore

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

Figure 4-1-1-7 Changes in service usage frequency after a smartphone purchase (SNS)



Note: Samples sizes were N = 535 in Japan, N = 696 in the United States, N = 800 in the United Kingdom, N = 716 in France, N = 887 in South Korea, and N = 931 in Singapore

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

B. Frequency of video-watching, Net music, and social game usage

We looked at how a smartphone purchase changed consumption of "watching videos (YouTube, etc.)," "Net music (including Net radio)," and "social games." Over 30 percent of users in Japan said they watched more videos, a pattern that was repeated in the other countries, with more than 50 percent of South Korean and Singaporean users saying they watched more videos. While the trend was not as pronounced as that for videos, many more Japanese users said their usage of Net music and social games increased than those that said their usage decreased. As with videos, a high percentage of South Korean and Singaporean users said their usage of Net music and social games increased (Figure 4-1-1-8).

al B2C e-commerce market was worth more than 1.20 trillion dollars in 2013 and is forecast to reach 2.36 trillion dollars by 2017. Growth is expected to be especially dazzling in the Asia Pacific region, which contains the large populations of China and India—from 383.9 billion dollars in 2013 to 1 trillion dollars by 2017, a 2.7 times gain—and the region's market is expected to overtake North America's, which was still the world's largest market in 2013.

In our international Web survey, the users who said their use of "Net shopping / auctions" increased after the purchase of a smartphone outnumbered those who said it decreased in all six countries. In Japan, almost 30 percent said their usage increased (Figure 4-1-1-9).

c. Trends in e-commerce (Net shopping and auctions) and O2O services

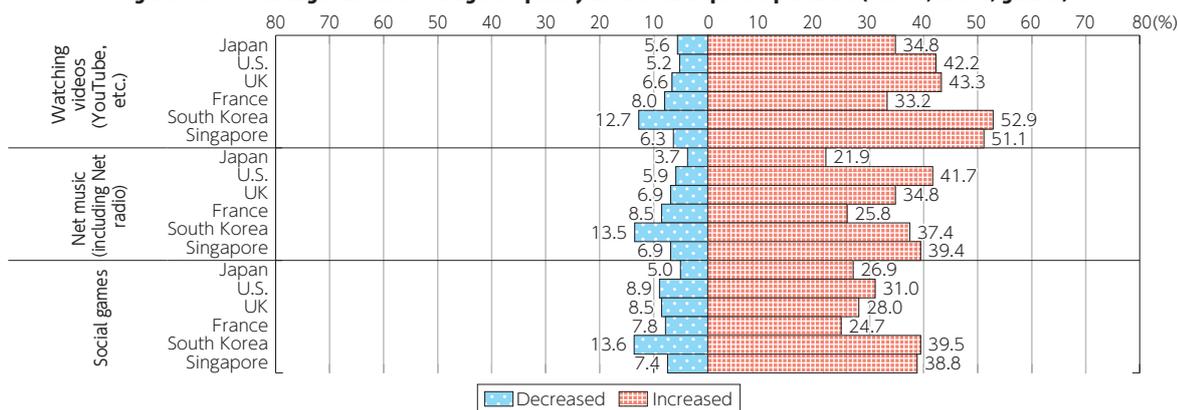
(i) Trends in the e-commerce market

According to estimates by eMarketer (U.S.), the glob-

(ii) Goods purchased online

We asked users what products they purchase on e-commerce sites and whether they purchase products in

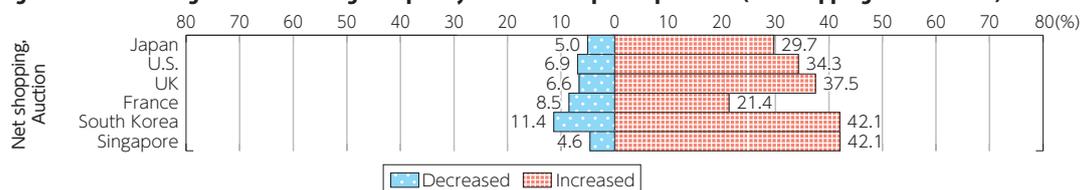
Figure 4-1-1-8 Changes in service usage frequency after a smartphone purchase (videos, music, games)



Note: Samples sizes were N = 535 in Japan, N = 696 in the United States, N = 800 in the United Kingdom, N = 716 in France, N = 887 in South Korea, and N = 931 in Singapore

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

Figure 4-1-1-9 Changes in service usage frequency after a smartphone purchase (Net shopping and auctions)



Note: Samples sizes were N = 535 in Japan, N = 696 in the United States, N = 800 in the United Kingdom, N = 716 in France, N = 887 in South Korea, and N = 931 in Singapore

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

a number of categories online or in real “bricks-and-mortar” stores. In comparison to the other product categories, a large percentage of users said they purchase, “books” and “CDs, DVDs, Blu-Ray discs” online in the five countries except Singapore. It is thought that these goods are more likely to be purchased online because they have been sold online since the advent of e-commerce sites.

On the other hand, users on the whole tended to purchase mobile phones—which require contracts to be signed, large consumer electronics products and furniture, PCs, food—where freshness is important, and gen-

erally low-priced miscellaneous goods and daily necessities in real stores. The reason why in-store purchases are favored for large consumer electronics products, furniture, and PCs is thought to be delivery charges and the availability of installation and setup services.

Singapore presents an interesting case, as less than 10 percent of Singaporean users make Net purchases in almost every product category. The low level of using the Internet for purchasing goods in Singapore contrasts sharply with South Korea, another Asian nation with a high smartphone ownership rate, where online shopping is very dynamic (Figure 4-1-1-10).

2. Changes in desired work styles and the participation of women

(1) Japan's labor force issues

a. The labor force versus the non-labor force in Japan

People aged 65 and older accounted for 23.0 percent of Japan's total population in 2010, but this percentage is forecast to be 39.4 percent in 2060. Japan's continuing low birthrate and aging population is creating challenges that no country in the world has ever experienced before. In addition, the working-age population—i.e., people between the ages of 15 and 64—fell to 79.01 million in October 2013, the first time in 32 years the working-age population was less than 80 million. In December 2013, this population had declined to 78.83 million. Projections call for our working-age population to plunge to just 44.18 million people by 2060.

b. The M curve

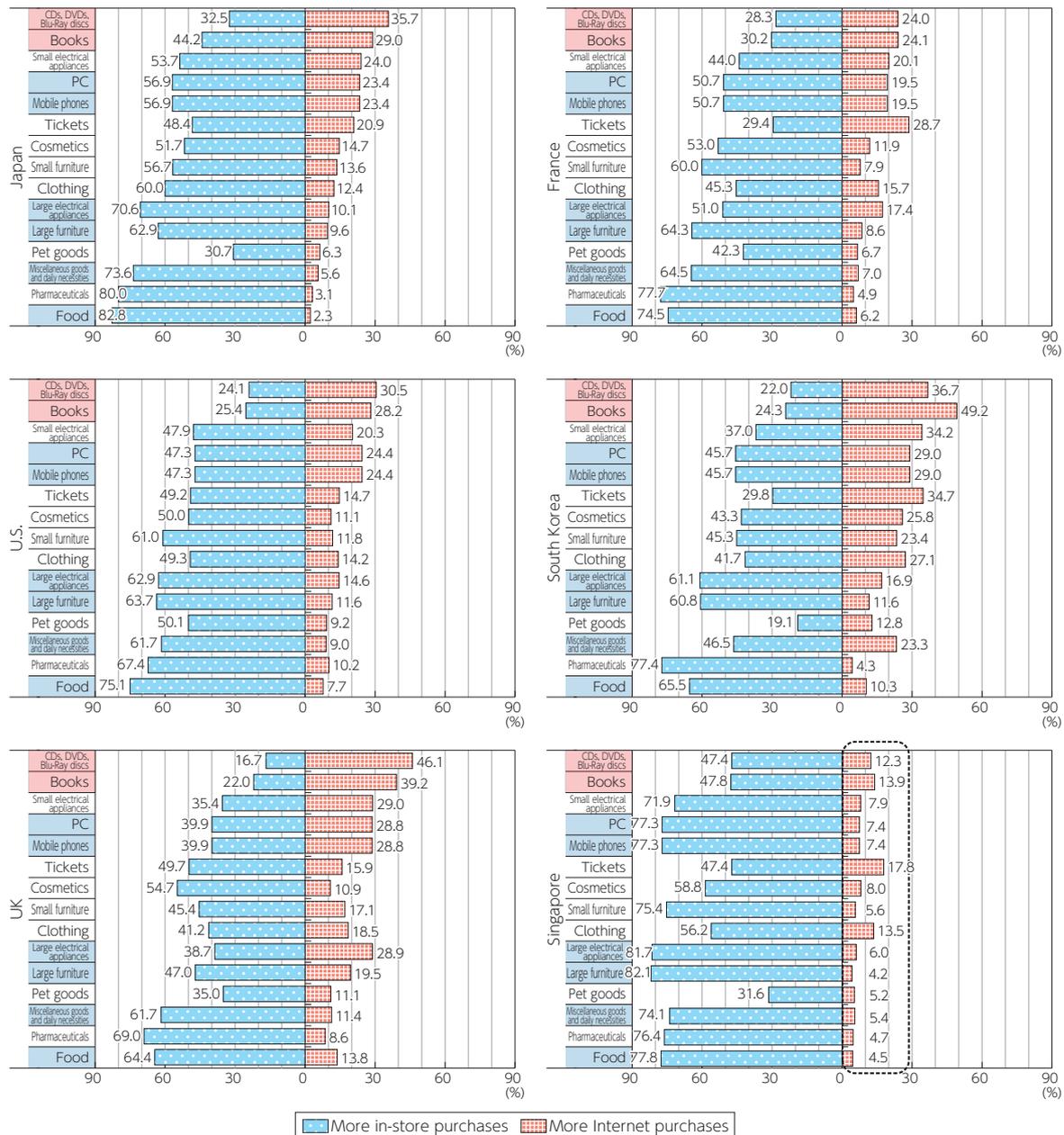
The M-curve problem, which highlights the decline in

the labor force participation rate among women in their 20s and 30s, has also been pointed out. This phenomenon is caused by women leaving the work force to get married, have children, and raise children. The M curve refers to the shape of the curve describing women's labor force participation rate versus age that has a depression for women in their 20s and 30s (Figure 4-1-2-1).

c. Participation of men and work-life balance

Along with the rise in dual-income families in Japan, members of the baby-boom generation have entered their 70s and are increasingly likely to need some level of caregiving, which is expected to result in more and more workers who are in the prime of their lives, and shouldering a disproportionate share of work responsibilities, having also to confront the prospect of giving care to seniors. A survey found that more than 70 per-

Figure 4-1-1-10 Goods purchased online



Note: Number of responses are N = 1,000 in all six countries.

Note: Large electrical appliances includes refrigerators, washing machines, TVs, and microwave ovens; small electrical appliances includes tablets, computer peripherals, and hair dryers; large furniture includes desks and beds; and clothing includes shoes and accessories.

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

cent of both employed men and women have some level of concern about caregiving. Preventing workers from having to give up their jobs to care for family members is an issue for employed men and women alike (Figure 4-1-2-2).

(2) ICT proliferation at corporations and telework

a. ICT proliferation at corporations

Looking at the transitions in ICT deployment at Japanese corporations finds that most corporations have established ICT systems. By 2007, 99 percent of Japanese corporations had Internet access, and nearly all corporations, 99.9 percent, had Internet access by the end of 2013. Of these, 80 percent had installed either fiber-optic or other high-speed Internet access means. Additionally,

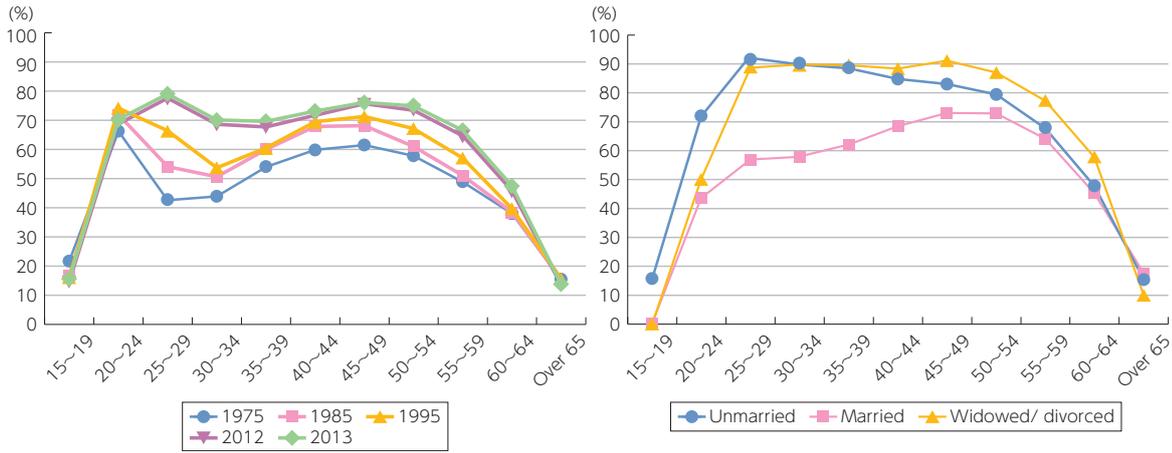
a majority of corporations had installed systems for connections from external PCs, mobile phones, or other devices, and about 30 percent of corporations had introduced cloud services of some form.

On the telework side, however, the deployment rate has hovered around 10 percent in recent years and has not spread nearly to the same extent as ICT systems (Figure 4-1-2-3).

b. Proliferation and challenges of home-based telework

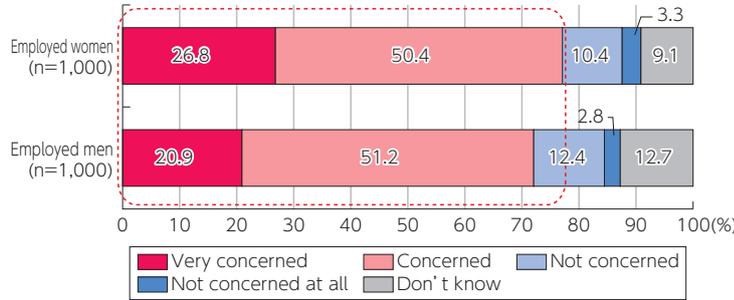
When asked about the need for telework, a majority of both men and women replied "already using telework," "actively want to use telework," or "want to use telework when necessary" (Figure 4-1-2-4). Over 75 percent of men and women gave as their reason "free to arrange

Figure 4-1-2-1 Changes in women's labor force participation rates (M curve)



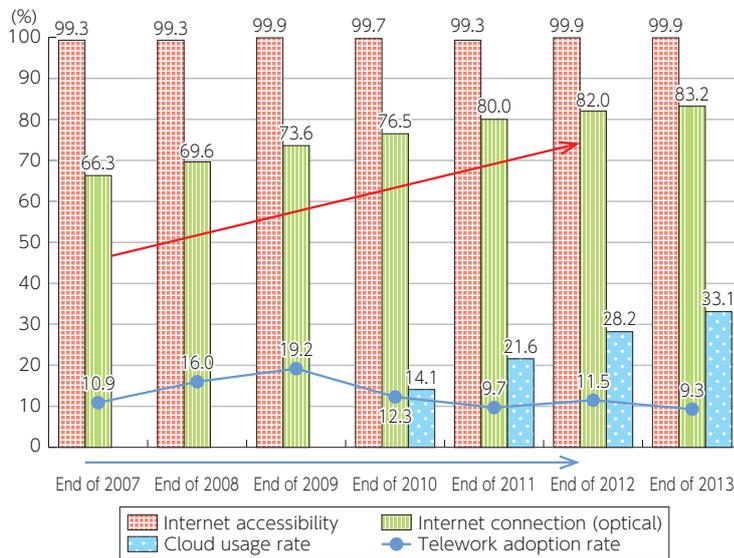
(Source) "Labor Force Survey (basic statistics)," MIC (2013)

Figure 4-1-2-2 Anxiety among the employed concerning balancing work and caregiving



(Source) "Survey of the Employed on Balancing Work and Caregiving," a survey commissioned by the Ministry of Health, Labour and Welfare (2013)

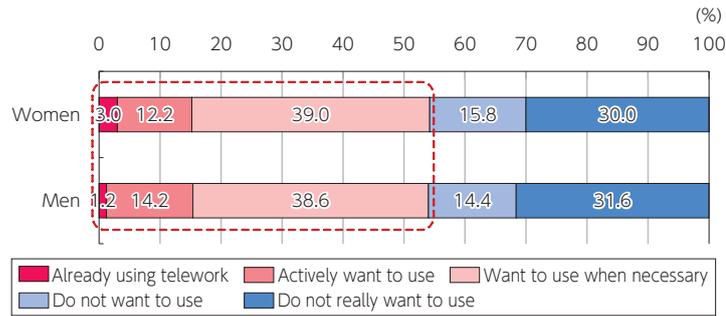
Figure 4-1-2-3 Transitions in ICT deployment at Japanese corporations



(Source) "Communications Usage Trend Survey," MIC

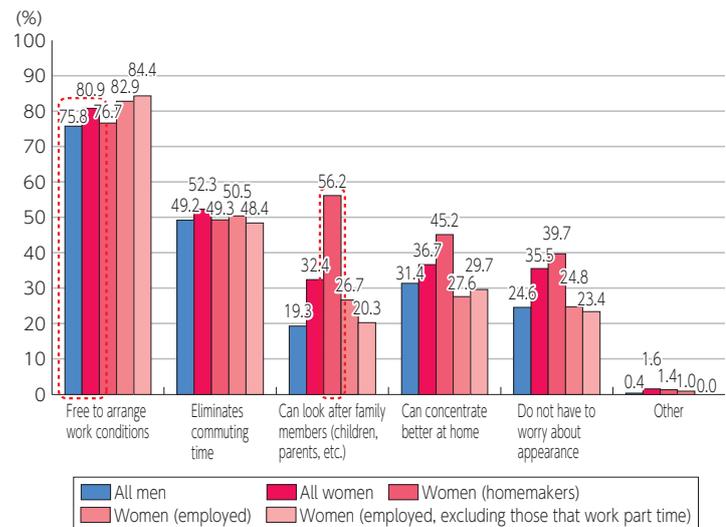
work conditions," whereas more women than men chose "can look after family members" (32.4 percent versus 19.3 percent). More than half of homemakers (56.2 percent) chose this reason for supporting telework (Figure 4-1-2-5).

Figure 4-1-2-4 Attitudes toward telework



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

Figure 4-1-2-5 Reasons for wanting to use telework (asked to respondents who answered "already using telework," "actively want to use telework," or "want to use telework when necessary")



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

Section 2 Promoting Further ICT Use and Application

1. ICT use and application by government

(1) Introduction of the My Number system

The Act on the Use of Numbers to Identify a Specific Individual in the Administrative Procedure and related bills were enacted and promulgated in May 2013. The national and local governments are currently moving ahead with preparations to notify individuals and businesses about their ID numbers in October 2015, to deliver personal ID number cards and start using personal and business ID numbers in January 2016, and to start operating the information provision network system (operation by local governments is scheduled to begin in July 2017) and the system to release records on information provision in January 2017.

(2) Upgrades to government information systems

a. Enactment of the Government CIO Act and approval of new strategies

The Act on the Partial Revision of the Cabinet Act and Related Legislation was established during the 183rd ordinary session of the Diet in 2013, which legislated the appointment and powers of the Government CIO. And on the issue of upgrades to government information systems,

the Cabinet decided the Declaration to be the World's Most Advanced IT Nation on June 14, 2013, and the IT Strategic Headquarters approved the Roadmap for the Declaration to be the World's Most Advanced IT Nation on the same day.

b. Visualizing the upgrade process to government information systems (Government Information System Upgrade Roadmap)

The Ministry CIO Liaison Committee approved the Government Information System Upgrade Roadmap on December 26, 2013, to promote upgrades to government information systems based on the declaration above.

c. Moving government procedures online and promoting their use

Online government procedures are a tool to save citizens and businesses time, in addition to raising efficiencies within government bodies. As further improvements are necessary to spread and entrench the use of these online procedures, the Ministry CIO Liaison Committee approved the Policy for Improving Convenience of Online Procedures on April 1, 2014.

d. Pushing IT adoption in internal government processes (electronic approvals)

Currently, there are some ministries and agencies that have been slow to adopt electronic approvals. Because of this situation, the Ministry CIO Liaison Committee approved the Action Plan to Promote Electronic Approvals on April 25, 2014. The Action Plan revises provisions pertaining to approvals, approval processes, and approval rules as well as stipulates focused measures for tardy departments and bureaus.

e. Other initiatives

There are many other initiatives underway to promote e-government. MIC, for its part, organized policies to realize the mission to “become the world’s most advanced ICT nation” in a document entitled Government ICT Adoption: Becoming the World’s Most Advanced ICT Nation at the Council on Economic and Fiscal Policy on May 27, 2014.

(3) Promoting e-local government

a. Accelerating initiatives to deploy cloud-based local government services

The Basic Policies for Economic and Fiscal Management and Reform: Ending Deflation and Revitalizing the Economy, decided by the Cabinet on June 14, 2013, called for the acceleration of initiatives pertaining to cloud-based local government services. The Declaration to be the World’s Most Advanced IT Nation, decided on the same day by the Cabinet, also pushed for accelerated local government initiatives concerning cloud-based local government services as part of “upgrading government information systems on the national and local levels.” Furthermore, the Basic Guidelines for Reconstruction in Response to the Great East Japan Earthquake (approved by the Reconstruction Headquarters in July 2011), which incorporates “promoting the introduction of cloud services in a wide range of areas including local governments,” made it a priority to construct e-local governments that are resilient against accidents and disasters.

b. Establishment of Ten Guidelines to Accelerate E-Local Government Initiatives

MIC announced the Ten Guidelines to Accelerate E-Local Government Initiatives, which was based on the Declaration to be the World’s Most Advanced IT Nation, in March 2014. The Guidelines called for: (1) taking the opportunity presented by the number system’s introduction to make information systems more efficient, starting with deploying cloud-based local government services; (2) working to improve the convenience for

residents through the use and application of open data and other new ICT; and (3) establishing systems to promote e-local government, such as ensuring the security of systems and constructing PDCA cycles. The Guidelines placed deploying cloud-based local government services in tandem with the number system’s introduction as a top priority, particularly emphasizing initiatives related to (1) above.

c. Promoting the widespread provision of regional information platforms

In partnership with the Association for Promotion of Public Local Information and Communication (APPLIC), MIC is taking the opportunity afforded by the introduction of the My Number system and the migration to cloud-based local government services to assist the provision of information and other tools so as to advance regional information platforms—infrastructure that connects and coordinates various information from different sources—by local governments across the country. As of January 2014, approximately 1,600 local governments were working on deploying systems that make use of regional information platforms. APPLIC is currently drawing up a Standard Specification for Regional Information Platforms targeting 26 internal operational systems that local governments use. APPLIC plans to add rules needed for standards between the systems of multiple local governments in order to support the My Number system.

(4) Local government awareness and initiatives

The awareness of local governments concerning the My Number system and the state of their initiatives was examined through the results from a survey given to local governments. The service most wanted by local governments once the My Number system is introduced is “general information services” (74.6 percent), which was followed, in order, by “implement general services that span multiple organizations and institutions to reduce workloads for users and administration” (73.3 percent) and “centralized information and procedures for various systems” (72.2 percent) (Figure 4-2-1-1).

As for issues with the future expansion of My Number applications, “no clear images of specific uses or applications” (53.5 percent) overtook “tough public financial conditions” (48.7 percent) as the No. 1 answer in this year’s survey. This was followed, in order, by “don’t know how to move forward with applications (systems, etc.)” (44.6 percent), “difficult to construct systems that can be used by all departments or throughout the region” (35.9 percent), and “tough staffing conditions” (35.9 percent) (Figure 4-2-1-2).

2. ICT use and application in town development

(1) Initiatives to promote ICT town development

a. Survey of local governments on inclinations to use and apply ICT in all aspects of town development

We conducted a survey of local governments (prefectural and municipal governments) to get a picture of the

state of regional ICT use and application.

When asked a multiple-answer question about particular current issues or perceptions from the standpoint of town development, the local governments’ responses followed the same pattern as the previous year’s survey:

Figure 4-2-1-1 Services local governments want after the My Number system is in place

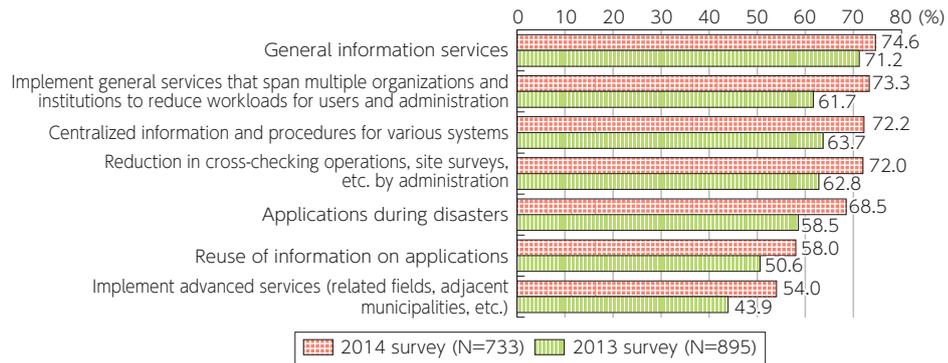
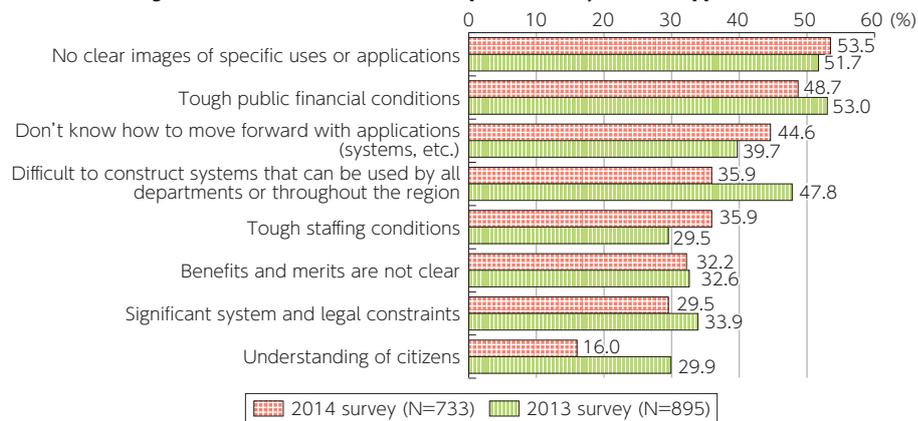


Figure 4-2-1-2 Issues with future expansion of My Number applications



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

Figure 4-2-2-1 ICT town development Knowledge

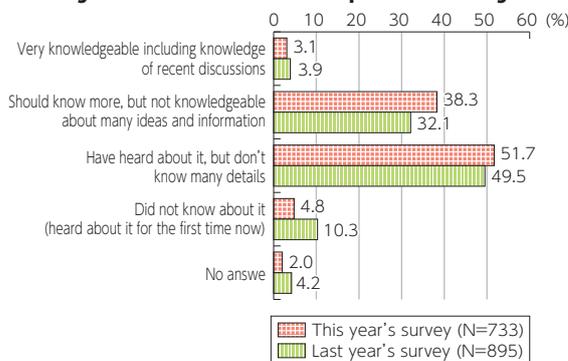
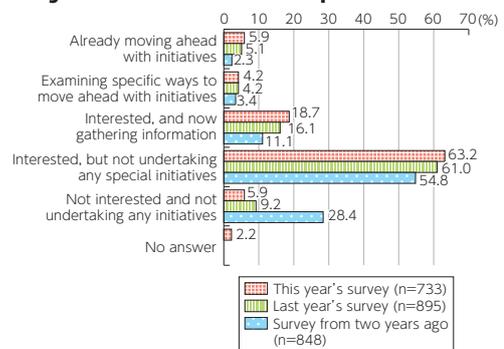


Figure 4-2-2-2 ICT town development initiatives



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

"decreasing birthrate and aging population" (77.5 percent), "industry and job creation" (63.6 percent), and "building safe and secure communities (controlling crime, strengthening disaster resilience, etc.)" (58.3 percent).

When asked for the one most important issue from the standpoint of town development, the No. 1 response was "decreasing birthrate and aging population" (34.2 percent), followed in order by "industry and job creation" (18.0 percent) and "building safe and secure communities (controlling crime, strengthening disaster resilience, etc.)" (17.6 percent). Local governments were also asked about their knowledge of ICT town development. The results, from most knowledgeable to least

knowledgeable, were: "very knowledgeable including knowledge of recent discussions" (3.1 percent), "should know more, but not knowledgeable about many ideas and information" (38.3 percent), "have heard about it, but don't know many details" (51.7 percent), and "did not know about it (heard about it for the first time now)" (4.8 percent) (Figure 4-2-2-1).

Nearly 30 percent (28.8 percent) of local governments answered positively—the combined total for "already moving ahead with initiatives," "examining specific ways to move ahead with initiatives," and "interested, and now gathering information"—about ICT town development initiatives (Figure 4-2-2-2).

When asked about areas they expect to benefit from

town development using ICT, local governments' top responses in order were "safety and security areas (controlling crime, strengthening disaster resilience, etc.)" (52.3 percent), "healthcare and nursing, caregiving, social welfare, education, and other lifeline areas" (40.5 percent), "wish to implement under a consistent policy without regard to individual areas," (37.2 percent), and "industry areas (agriculture, forestry, and fisheries, tourism, local industries) and employment areas" (28.6 percent).

b. Vertical expansion of ICT town development promotion projects

The ICT Town Development Promotion Council, set up by MIC in January 2013, is working in three areas: expanding and accelerating ICT Smart Town projects at key sites in order to widely deploy ICT Smart Towns by around 2018; aiming to realize by 2015 a common platform that will manage things, times, locations, and everything else with IDs for broader regional cooperation and public-private cooperation; and studying the establishment of systems and global development policies in order to broadly disseminate outcomes gained from pilot projects. In February 2012, the ICT Town Development Promotion Council set up a deployment working group. This working group is studying, at a more specialized level, policies for widely deploying successful models and specifications for a common ICT town development platform. The Council also launched a common ID use and application working group in December 2013.

c. Implementing local pilot projects

MIC is running pilot projects under the ICT Town Development Promotion Project to pave the way to actualizing ICT Smart Towns. For FY 2012, five projects were selected in Mitaka in Tokyo, Kashiwa in Chiba Prefecture, Shiojiri in Nakano Prefecture, Toyota in Aichi Prefecture, and Fukuroi in Shizuoka Prefecture. Twenty-eight local pilot projects, including these five, were carried out in FY 2012 and FY 2013.

Under the FY 2013 ICT Town Development Promotion Project, two pilot projects were run: the ICT Town Development Platform Formation Project (led by Mitaka in Tokyo), which aims to broadly coordinate, share, and deploy the outcomes of the FY 2012 ICT Town Development Promotion Project, and the Citizen Disaster Information Distribution Model Project Using Open Data and Ubiquitous Technology (Yokosuka in Kanagawa Prefecture), which aims to prepare for large-scale disasters in the greater Tokyo area. And as we move from testing to implementation of new town developments using ICT, we are working to export the results internationally.

(2) Safe and secure town development

a. Disaster-management initiatives

The results of the local government survey show that local government initiatives using and applying ICT for disaster response and disaster management are relatively well developed. The most common disaster-man-

agement initiatives that local governments are currently either running or participating in / cooperating with are "disaster-information email" (71.9 percent) and "collect disaster information with cameras, sensors, and other devices" (47.0 percent). In contrast to current initiatives, the top disaster-management initiatives that local governments are planning or studying for future implementation are "sharing disaster-information maps" (26.3 percent), "sharing information with people most at risk during disasters" (23.0 percent), and "disaster information acquisition and restoration requests" (22.9 percent).

MIC will tap into the FY 2013 supplementary budget to undertake a program to fortify regional ICT that consists of two parts: (1) projects to establish regional public networks and associated systems; and (2) projects to establish disaster-response information stations and related systems. The objective is to further the establishment of public wireless LAN and the fortification of networks, along with constructing an information-communication ecosystem where residents can reliably obtain disaster and relief information from local governments during disasters.

The Basic principle for building strong and flexible (resilient) nation, the Declaration to be the World's Most Advanced IT Nation, and other government policies put a very high priority on the construction of means to collect and communicate information during disasters. MIC, for its part, has promoted the nationwide expansion of practical public information commons since 2011. The Ministry also launched the Study Group on Approaches to Common Platforms for Communicating Information during Disasters in March 2014, which is studying issues hindering the nationwide expansion of public information commons and solutions that should be promoted in order to further expand and develop public information commons.

b. Crime prevention initiatives

In the area of crime prevention, the local government survey found the most common crime prevention initiatives that local governments are currently either running or participating in / cooperating with are "crime prevention email" (63.7 percent) and "sharing crime prevention maps" (14.5 percent). In contrast to current initiatives, the top crime prevention initiative that local governments are planning or studying for future implementation is "protecting children and students" (6.2 percent).

c. Tourism initiatives

In the area of tourism and sightseeing, the local government survey found the most common initiatives that local governments are currently either running or participating in / cooperating with are "providing tourism information with other regions and organizations using influential Websites" (32.6 percent) and "generating and providing tourism information using multifunctional terminals and other devices" (22.8 percent). In contrast to current initiatives, the most notable tourism initiative that local governments are planning or studying for fu-

ture implementation is “using apps to encourage excursions, long stays, and consumption” (16.0 percent).

As large numbers of visitors to Japan are expected during the 2020 Tokyo Olympic and Paralympic Games, MIC is moving ahead with efforts in three areas: (1) establishing infrastructure; (2) promoting ICT use and application; and (3) communicating the attractions of Japan.

d. Transportation initiatives

In the area of transportation, the local government

survey found the most common initiatives that local governments are currently either running or participating in / cooperating with are “on-demand transportation” (24.1 percent) and “real-time transportation information systems or bus location systems” (12.7 percent). In contrast to current initiatives, the most notable transportation initiative that local governments are planning or studying for future implementation is “real-time transportation information systems or bus location systems” (11.5 percent).

3. ICT use and application in social and economic fields

(1) Examples of ICT applications in medical care and healthcare

Japan, which has developed into a full-blown super-aging society, is confronting many issues, including a shrinking working-age population and fast-rising medical expenses. And just as it is important to have a society in which all citizens can maintain their health and live autonomously for as long as possible, as well as be able to live with reassurance in communities they are familiar with while having access to high-quality medical and nursing services when they fall ill, it is also important to construct a society that can deliver economic growth.

a. Local government survey results on medical care and healthcare

For the purposes of the local government survey, ICT use in the medical care and healthcare field was divided into medical care / nursing and social welfare. In the area of medical care / nursing, the local government survey found the most common initiatives that local governments are currently either running or participating in / cooperating with are “radiation imaging diagnoses and telediagnoses” (14.2 percent) and “electronic medical record coordination” (11.3 percent). In contrast to current initiatives, the most common future initiatives cited were “electronic medical record coordination” (13.3 percent), “emergency telemedicine” (8.1 percent), “local information collaboration for paramedic staff” (7.6 percent), and “home telediagnoses” (7.0 percent).

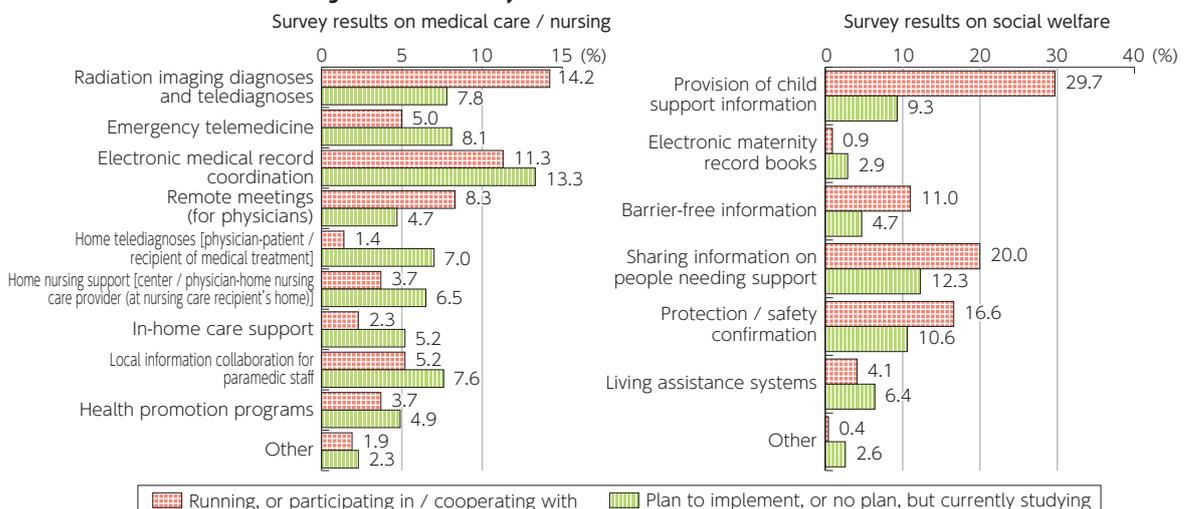
In the area of social welfare, the local government survey found the most common initiatives that local governments are currently either running or participating in / cooperating with are “provision of child support information” (29.7 percent), “sharing information on people needing support” (20.0 percent), and “protection / safety confirmation” (16.6 percent). In contrast to current initiatives, the most common future initiatives cited were “living assistance systems” (6.4 percent) and “electronic maternity record books” (2.9 percent) (Figure 4-2-3-1).

b. Government ICT use and application initiatives in medical care and healthcare

In the area of medical care, ICT is seen as beneficial in sustaining the communications and coordination required among various entities regarding medical care, nursing, and living assistance. ICT has become especially important in the construction of platforms that coordinate medical care information.

In healthcare, the government is looking to modernize existing mechanisms by making use of cloud services and other advances as well as eyeing future overseas deployment of advanced healthcare models. And even as smartphones and tablets are becoming key devices in healthcare, the government is anticipating the use of sensors and wearable devices to save time and expense in the collection and analysis of routine patient data.

Figure 4-2-3-1 Survey results on medical care and healthcare



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

As for future efforts, the Declaration to be the World's Most Advanced IT Nation calls for the nationwide deployment of medical information coordination platforms, health promotions, and initiatives to prevent the occurrence and the exacerbation of lifestyle diseases. MIC's Smart Platinum Society Promotion Conference has discussed these and other issues and is working toward the nationwide deployment of medical and nursing information coordination platforms using a high-quality, inexpensive minimal model that makes use of cloud technologies. The Conference is also working toward establishing an ICT health model (preventative healthcare) that enables citizens to maintain their health and live independently longer. In view of policies on future overseas expansion, Japan, as a pioneer in solving issues associated with a super-aging society, should provide Japan's ICT use and application models on a global scale. The government is seeking an international collaboration framework for the examination stage of these models, including working in partnership with universities, research institutions, and ICT businesses in other countries.

(2) Examples of ICT applications in agriculture

Two observed issues for our agricultural sector are a decline in the number of primary farmers and the advanced ages of our farmers. Another concern is the increase in out-of-production fields and rice paddies that has accompanied the decrease in agricultural worker numbers. Given these conditions, the application of ICT to revive the nation's agricultural sector is expected to optimize the cultivation conditions for crops, transform the highly productive techniques of expert farmers into viewable data, improve yields through the establishment of practical techniques, and increase production and added value of agricultural produce that meets consumer needs by coordinating information from production to consumption.

a. Local government survey results on agriculture

In the area of agriculture, the local government sur-

vey found the most common initiatives that local governments are currently either running or participating in / cooperating with are "direct online sales" (25.4 percent) and "traceability" (17.0 percent). In contrast to current initiatives, looking to the future local governments see "prevention of crop damage by wildlife" (11.2 percent) and "farmland management" (5.5 percent) as important fields for ICT applications (Figure 4-2-3-2).

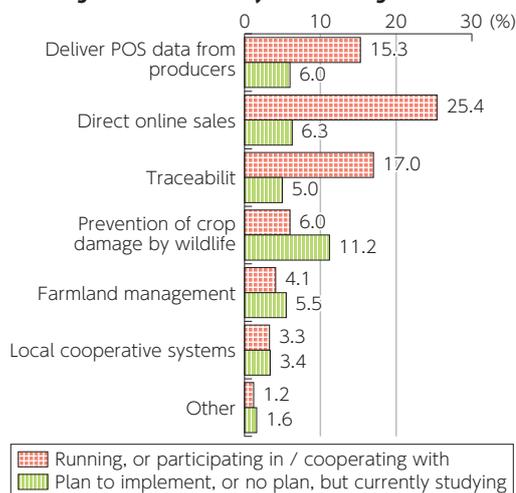
b. Government ICT use and application initiatives in agriculture

The government is moving ahead with initiatives to bolster the competitiveness of the agriculture industry based on the agriculture information creation and distribution promotion strategy, announced as a cross-government strategy by the IT Strategic Headquarters on June 3, 2014. The strategy pertains to the information handling and standardization needed to ensure the interoperability of agricultural information, so that a broad range of agricultural information can be generated and distributed throughout the entire agricultural sector, while heeding the rights of farmers who are trying to use and apply agricultural information.

(3) Examples of ICT applications in education

Bringing ICT into education is fundamental to becoming the world's most advanced ICT nation. It is important that we build a 21st-century society in which children, who will lead the next generation of our country, become familiar with ICT at an early stage, elevate their information usage skills, and create new intellectual and cultural value. In the area of using and applying ICT in education, from FY 2010 until FY 2013 MIC ran the Future School Promotion Project in association with the Ministry of Education, Culture, Sports, Science and Technology's Learning Innovation Project. As for using and applying ICT in university education, Massive Open Online Courses (MOOCs), which open up online courses to a broad audience and provide credit for completing courses, are expanding primarily in the West, but Japan is also working on MOOCs.

Figure 4-2-3-2 Survey results on agriculture



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

a. Local government survey results on education

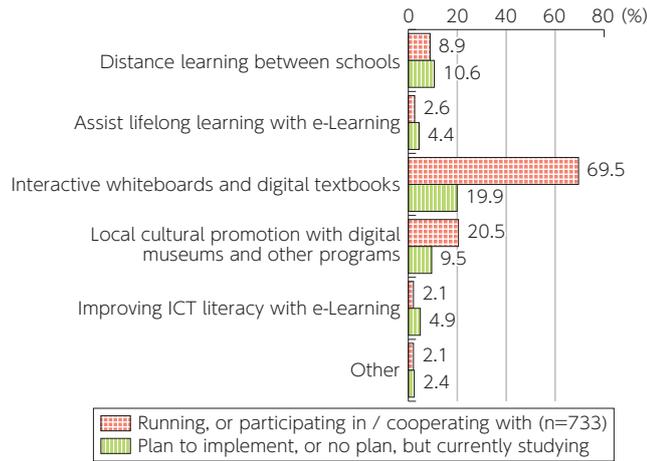
In the area of education, the local government survey found the most common initiatives that local governments are currently either running or participating in / cooperating with are “interactive whiteboards and digital textbooks” (69.5 percent), “local cultural promotion with digital museums and other programs” (20.5 percent), and “distance learning between schools” (8.9 percent). In contrast to current initiatives, looking to the future the most common local government plan was “improving ICT literacy with e-Learning” (4.9 percent) (Figure 4-2-3-3).

ure 4-2-3-3).

c. Government ICT use and application initiatives in education

The Declaration to be the World’s Most Advanced IT Nation calls for the incorporation of IT in classrooms at all elementary schools, junior-high schools, high schools, and special needs schools during the 2010 decade as well as for the construction of education and learning IT environments that seamlessly connect schools and homes.

Figure 4-2-3-3 Survey results on education



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

Section 3 Construction of Safe and Secure Internet Usage Conditions

1. Internet addiction and other new issues and the importance of Internet literacy

(1) International comparison of Internet addiction trends

With the increased time spent on smartphones, tablets, and other devices as well as on social media, concerns have been raised about Internet addiction and its impact on real-world social life. Internet addiction has been defined as experiences of elevated anxiety levels that people have when not constantly engaged with the Internet.

Using the Young 20 test to assess Internet addiction, we analyzed the extent of Internet addiction in Japan from an international viewpoint by comparing results from the six-country Web survey mentioned in Section 1 of this chapter. Some points of caution must be given about this analysis and its results. Although we concentrated primarily on Internet users with a score of 70 or more on the test (indicating severe impairment due to Internet addiction), it does not always follow that someone in the 70 or higher category requires medical treatment for compulsive Internet behavior. Furthermore, this survey was an international Web survey to highlight Japan’s characteristics in comparison with those of other countries, and, by the very nature of Web surveys, respondents are much more likely to be heavy Internet

users than respondents to a paper survey.

a) International comparison of Internet addiction trends

In all six countries where the international Web survey was conducted, the 10 to 29 age group had the highest Internet addiction tendency. The older the age group, the less pronounced this tendency was. In addition, the rate of Internet addiction was higher among smartphone owners than non-owners in all six countries.

Comparing the six countries’ Internet addiction rates in the prime 10 to 29 age group finds that although Japan’s rate was high, at over 10 percent, it was the second lowest after France. The rate was at or above 20 percent in the United States and the United Kingdom. Moreover, narrowing down the results to just smartphone owners did not produce a particularly high Internet addiction rate in Japan either. Since similar results were found in all the other age groups, there is no reason to single out Japan as having considerably high Internet addiction rates (Figure 4-3-1-1).

To see how differences in why people use the Internet might affect Internet addiction rates, respondents were asked to choose their main purpose for using the Inter-

Figure 4-3-1-1 International comparison of Internet addiction rates (by age and by smartphone ownership)



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

net from "communication"—such as SNS and other communication apps, which are the main content sites on the Internet, "collect information / use content"—including watching videos and reading news online, "online games" played over the Internet, and "shopping"—which typically means mail-order items ordered online and Internet auctions. In all six countries, users who said they mainly use the Internet for "communications" had a greater likelihood of Internet addiction. And in the United States, the United Kingdom, and South Korea, users who said they mainly use the Internet for "online games" had somewhat higher Internet addiction rates.

The difference in Internet addiction rates in Japan between smartphone owners and non-owners was also analyzed. Since the sample size was small in this case, the results must be treated with caution. Nevertheless, "communication"-oriented users who owned smartphones were shown to have higher addiction rates.

We also analyzed the average time spent per day on mobile phones (smartphones and feature phones) and PCs. The time spent on PCs was longer than that on mobile phones in all six countries, but mobile phone usage time was nearly the same as PC usage time in South Korea and Singapore. This is another demonstration of how entrenched mobile phones are in people's lifestyles in these two countries, where smartphone proliferation is high, as stated in Section 1. We broke down these results further by the user's primary Internet usage purpose and found that in all the countries users oriented toward "online games" tended to use PCs longer. One characteristic in Japan is that "communication" users spent an average of 103 minutes on their mobile phones, which was significantly longer than users in the other segments.

These results suggest that Japanese users oriented toward SNS and other communications spend more time on smartphones and other devices and have relatively higher addiction rates.

b. Merits of SNS and smartphone use

In general, many users in all six countries said the merits of SNS use were "able to get information quickly," "able to get lots of information," and "increased opportunities to communicate with family, partners, friends, and acquaintances." A fair number of users also cited "increased new friends and acquaintances" and "reestablished contact with old friends" as benefits (Figure 4-3-1-2).

(2) Importance of Internet literacy

a. Problems with flaming—insulting and hostile posts on social media

Flaming has attracted attention in recent years on social media because of trouble arising from insulting and hostile posts. The frequency of Google searches in Japan for "Twitter enjo [flaming]" and "Facebook enjo" have steadily escalated since around 2010. Searches for "Twitter enjo" in particular have skyrocketed since 2013, illustrating that flaming drew increased attention in 2013.

b. User attitudes toward Internet literacy

(i) Anonymous use of SNS and awareness of being identified

The use of leading SNS and the use of anonymous names versus real names on SNS was analyzed for all six countries. Facebook usage was lower in Japan than in the other countries, but in all six countries many users use their real name on Facebook, since it recommends users register under their real name. However, over 70 percent of Japanese users of Twitter, which does not make any specific recommendations to register with real names, use the service anonymously, a noticeably higher percentage than in the other countries (Figure 4-3-1-3).

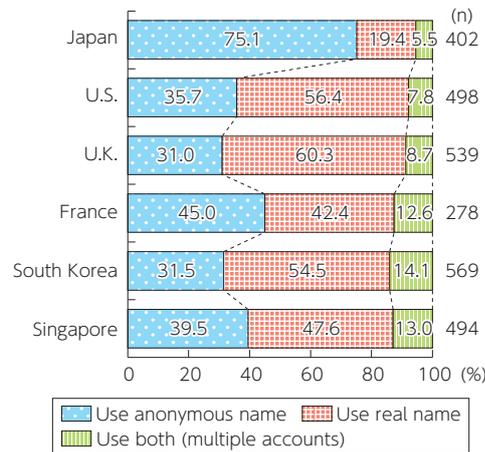
In relation to the high degree of anonymous SNS use and the flaming incidents mentioned above use, more than half of Japanese users (60 percent)—when asked "do you think you might not be identified if you use SNS anonymously?"—recognized the possibility of being

Figure 4-3-1-2 Merits of SNS



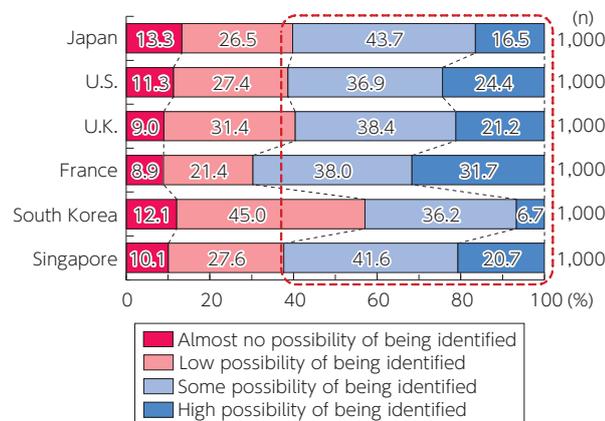
(Source) "Study Report on the Social Impacts of ICT Advancement," MIC (2014)

Figure 4-3-1-3 Use of anonymous names versus real names on Twitter



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

Figure 4-3-1-4 Awareness of the risk of being identified even with anonymous use



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

identified (Figure 4-3-1-4).

When users were asked for "people you think follow and see your posts on your SNS account," a high percentage of Japanese users, as in the other countries, recognized friends and acquaintances. On the other hand,

fewer Japanese users than those in the other countries mentioned "workplace supervisors or school teachers," "former classmates," "family members," and other people. When asked about the content of actual communications on SNS, there was no significant gap between Ja-

pan and the other five countries in the response rate for “chat and communicate with friends, acquaintances, and partners.” However, the response rates for family topics or topics about society, work, or health tended to be lower in Japan than in the other countries.

From these results, we can surmise that one characteristic of SNS use in Japan is an awareness of privacy among friends or groups of acquaintances.

(ii) Literacy education about SNS

Around 20 percent of Japanese respondents said they had taken literacy education or training on the use of SNS, which was a lower rate than in the other five countries. When the results were narrowed to just smartphone owners, this rate rose to close to 30 percent in Japan. When limited to the 10 to 29 group of young people, the response rate of those who had taken literacy education or training increased in all the countries, including Japan (Figure 4-3-1-5). These results indicate that literacy education about the use of SNS starting to spread in Japan, particularly in the youth cohort.

(3) Initiatives on proper ICT practices

a. Initiatives by private sector organizations

The Japan Internet Safety Promotion Association, set up as an initiative to establish usage environments for mobile phones and the Internet, carries out public awareness activities in local communities. It works to enhance explanations, such as creating usage rules, at homes and schools about to adopt smartphones or social media, it lists on its Website classes on Internet safety and security provided for free by member enterprises and organizations, and it encourages ICT use at schools and local communities by publishing classes that do not require instructor fees or transportation charges. The Japan Social Game Association (JASGA) began in January 2014 to publicize the development of educational apps for elementary-school-aged children and to carry out public awareness activities, with the aim of educating people about the safe and secure use of social games.

b. Initiatives in local regions

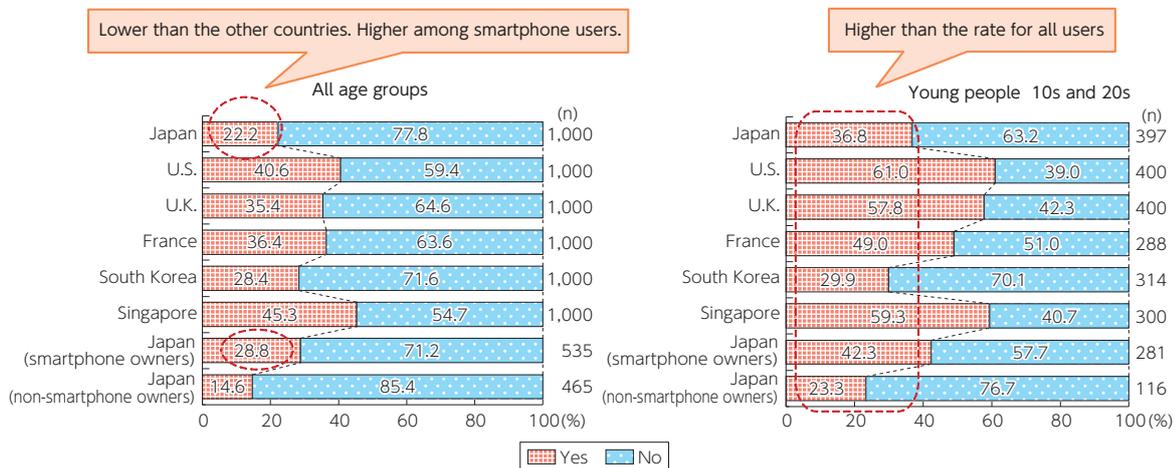
The Second Basic Plan on Development of Internet Enhancement for Young People calls for stronger ties between the national government, local governments, and nongovernmental organizations. This spawned, starting in FY 2013, forums for building an environment that provides safe and secure Internet use for young people in eight national blocks. The forums, with the sponsorship of the Cabinet Office, prefectures, cities, and national administrative institutions, aim to construct platforms that will allow institutions and organizations related to promoting the establishment of Internet usage environments for young people in each region to work together and independently carry out various initiatives. Participants include guardians, local governments, schools and educators, police, and communication corporations. Forums are scheduled to be held in six places nationwide in 2014.

c. Initiatives by governments

The Basic Plan on Measures for Providing Safe and Secure Internet Use for Young People was established and implemented throughout government in June 2009 as an initiative for young people, who will lead the future of our country, to properly handle ICT. This was followed by the Second Basic Plan, under which initiatives are being undertaken by the national government, local governments, businesses, and private organizations.

With the recognition that establishing environments in which young people, after understanding the risks associated with Internet use and measures to prevent risks, can use smartphones and other devices correctly, has become even more important than in the past, the Cabinet Office, MIC, the Ministry of Economy, Trade and Industry, the IT Strategic Headquarters under the Cabinet Secretariat, the National Policy Agency, the Consumer Affairs Agency, the Ministry of Justice, and the Ministry of Education, Culture, Sports, Science and Technology have been concentrating on developing these environments under an initiative on public awareness for young people and their guardians since 2014.

Figure 4-3-1-5 Literacy education or training



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

2. Ensuring cyber security

(1) Recent developments in threats against information security

McAfee, an information security vendor, maintains a database of malware samples it detects. The company reported that malware samples increased by 15 percent in the fourth quarter of 2013 to over 196 million samples. Tracking the transformations in information security threats since 2000 finds that they have been steadily growing in sophistication and complexity. New forms of malware and attack methods emerge nearly every year, while the objectives appear to have shifted from nuisance attacks targeting individuals to attacks targeting organizations, key infrastructures, and countries for economic benefit or for organized crime.

a. Unauthorized logins to Web services and unauthorized use of services

In 2013, there was a string of victims where attackers used stolen IDs and passwords to gain access to and exploit Web services in the victim's name. One method of gaining login credentials to Web services is list-type account hacking. Attackers use lists of stolen IDs and passwords to try iteratively to access accounts on many different Web services. The insight behind this attack

method is that many people use the same ID / password combination for multiple Web services.

The six-country survey asked users about their use of Internet IDs and passwords. The results found that between 30 and 50 percent of users in all six countries have between two and five IDs (Figure 4-3-2-1). And in five of the countries, except France, more than 40 percent of the respondents said the number of accounts and passwords they maintained increased (total of "increased greatly" and "increased" responses) once they started using a smartphone (Figure 4-3-2-2).

Users with multiple accounts were asked whether they reused passwords between accounts. In all six countries, only around 20 percent of users said they "change passwords for each site" (Figure 4-3-2-3). When asked how often they change passwords, about 20 percent of users in France said "regularly," while less than 10 percent of users said the same in Japan and South Korea (Figure 4-3-2-4).

(2) Information security awareness among users

MIC conducted an international survey of users in Ja-

Figure 4-3-2-1 Number of IDs used on the Internet

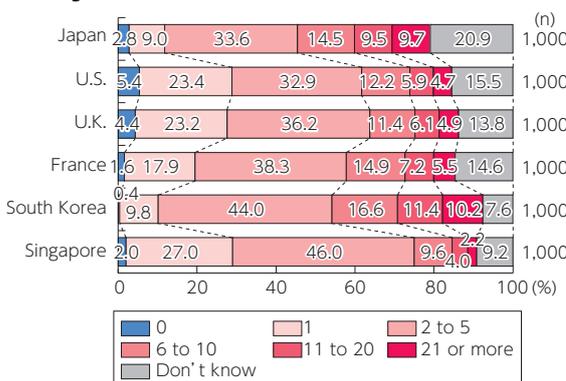
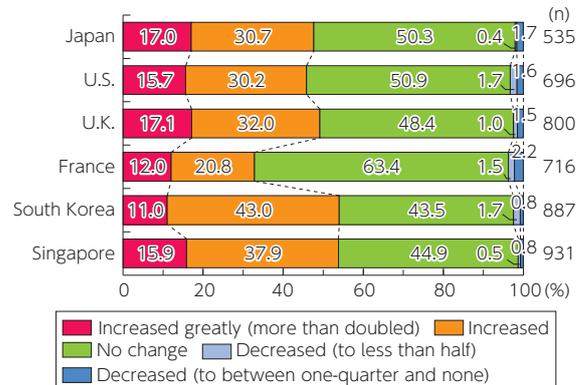


Figure 4-3-2-2 Changes in accounts and passwords after owning a smartphone



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

Figure 4-3-2-3 Reuse of passwords

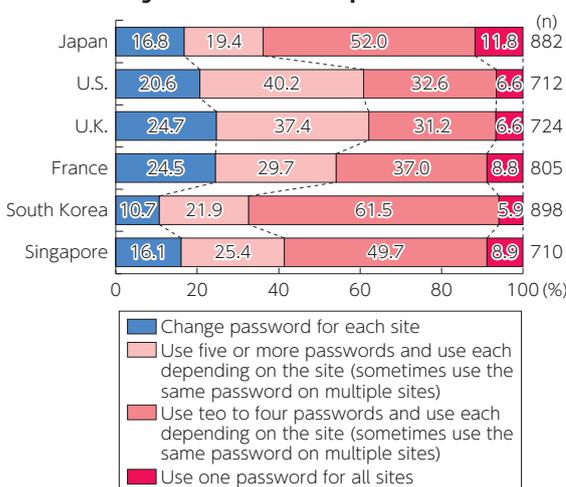
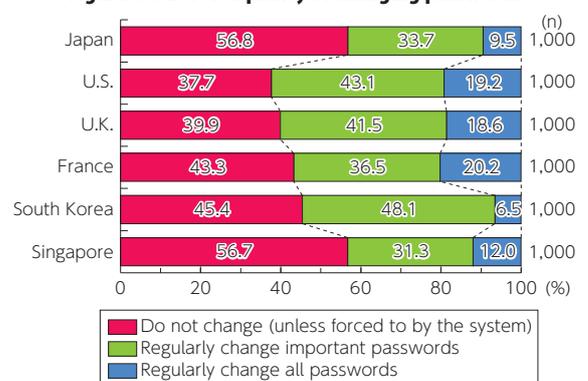
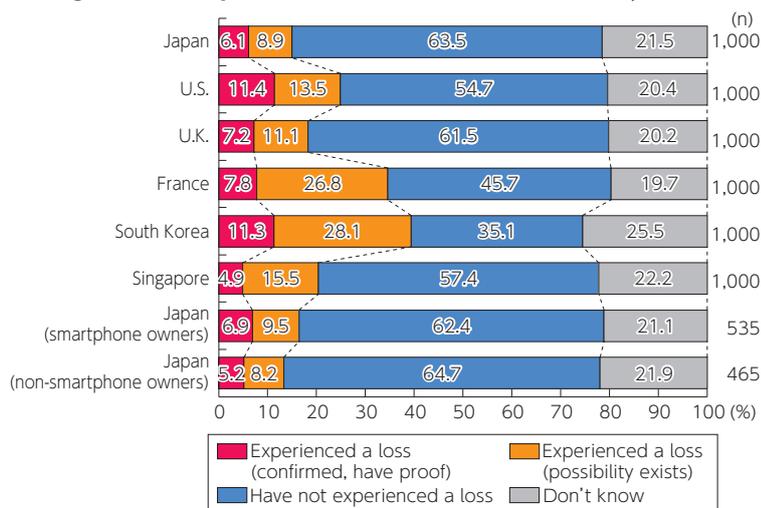


Figure 4-3-2-4 Frequency of changing passwords



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

Figure 4-3-2-5 Experienced losses from an information security breach



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

pan, the United States, the United Kingdom, France, South Korea, and Singapore to determine whether there were any national differences in the awareness of individuals about information security.

a. Experiences with losses from information security breaches

First, users were asked whether they had experienced a loss resulting from an information security breach in using the Internet. Summing the response rates for "experienced a loss (confirmed, have proof)" and "experienced a loss (possibility exists)," South Korean users led the way, with 39.4 percent reporting a loss, followed in order by French users (34.6 percent) and U.S. users (24.9 percent). On the other hand, the numbers were lower in Japan, with 15.0 percent of Japanese users saying they had experienced a loss, a figure that only edged up to 16.6 percent when the results were limited to smartphone owners (Figure 4-3-2-5).

When asked about the types of losses experienced, the most common loss in Japan was "received unsolicited email (spam) (but not including false billing email)" at 61.3 percent, followed in order by "computer virus infection" (49.3 percent) and "received email demanding payment for an unknown fee (false billing email)" (49.3 percent). "Received unsolicited email (spam) (but not including false billing email)" and "computer virus infection" were among the most common losses experienced in the other countries as well.

b. Recognition levels of threats on the Internet

Users were asked about their recognition of various threats on the Internet. In Japan, the most widely recog-

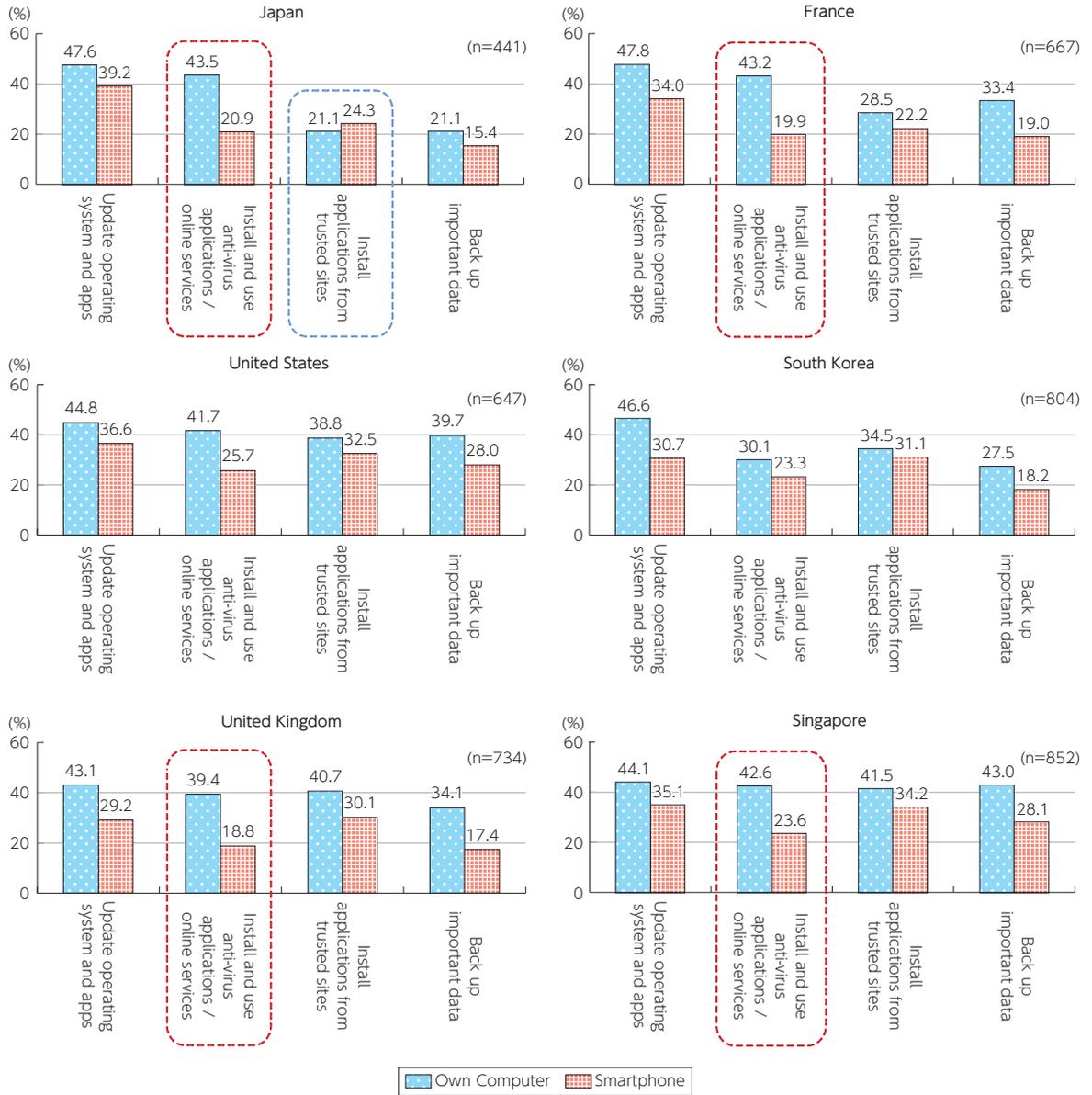
nized threats, in order, were "spyware" (63.5 percent), "phishing" (62.6 percent), "one-click fraud" (60.1 percent), "false billing" (59.4 percent), "spam" (58.6 percent), and "malware (computer viruses)" (48.2 percent). Recognition levels for "spyware," "malware (computer viruses)," and "spam" were generally high in the other countries as well. But there were discrepancies in other countries with Japan's higher recognition levels of "one-click fraud" and "false billing." Recognition levels in Japan of newer threats—"targeted attacks," "list-type account hacking," and "ransomware"—were all still under 20 percent.

c. State of information security measures

When it came to information security measures on their own PCs, less than 20 percent of Japanese users "install applications from trusted sites" and "back up important data," a lower percentage than in the other countries. On smartphones, more Japanese users, 35.9 percent, were likely to "update smartphone operating system and apps" than users in the other countries, but fewer, 14.8 percent, "back up important data" on their smartphones.

Figure 4-3-2-6 compares the implementation of security measures on PCs versus on smartphones for users who own both devices. Security measures on smartphones tended to lag behind measures on PCs. One telling difference was the gap in installing and using "anti-virus applications / online services" on PCs versus on smartphones. This gap was around 20 percent in Japan, the United Kingdom, France, and Singapore.

Figure 4-3-2-6 State of security measures taken (comparison between own pc and smartphone)



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