Chapter 1

Present Status and Challenges for Digitalization

This chapter summarizes the present status and challenges for digitalization of Japan from three perspectives: utilization of digital technologies in people's lives; digital transformation of corporate activities, and; digitalization in the public sector.

Section 1 Present Status and Challenges for Digital Utilization in Citizen's Lives

How are digital technologies used in people's daily lives?

1. Present Status of Use of Digital Technologies

According to the Communications Usage Trend Survey conducted by the MIC every year, the percentage of households owning mobile terminals including mobile phones and smartphones is over 90%, and more than 80% of households own smartphones.

With the rapid spread of smartphones, use of the Internet with mobile terminals is expanding.

Next, we overview the spread of the use of digital technologies in people's lives based on a survey conducted by the MIC in 2021[5].

(1) Digital technology usage environment, use situation of services, etc.

a. Internet connection methods

The survey asked the method for connection to the Internet at home (Figure 1-1-1-1). More than half of the respondents are using optical lines, which ensure use of high-speed and large-capacity communication. Second are mobile phones, etc. followed by mobile Wi-Fi routers and cable television lines.

b. Information literacy

Here, respondents were asked whether or not five specific cases regarding use of SNS, which are considered to apply to people having information literacy, apply (Figure 1-1-1-2).

For all cases, respondents answering "applies" accounted for 40 to 60%. The ratio was highest for "I can compare multiple Information sources to ascertain the truth", while the ratio was lowest for "I can identify the originator of the information and determine the reliability."

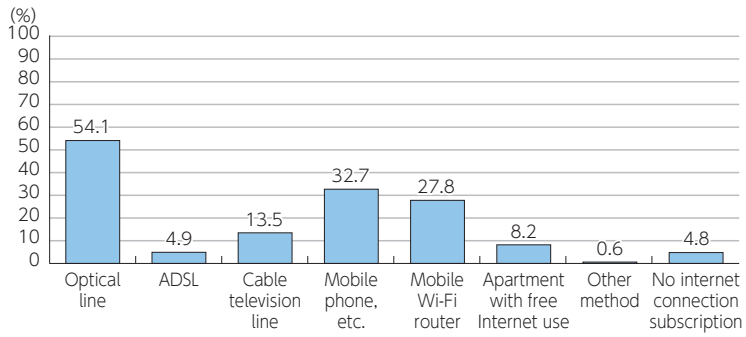
c. Use Situation of Digital Services

(a) Use situation of Internet-based services (domestic)

First, let us look at the use situation of Internet-based services. The survey asked everyday use of Internet-based services (Figure 1-1-1-3).

Most used services are "Internet shopping," "payment/settlement (e.g. credit card)" and other consumption-related services. These are followed by "map/navi-

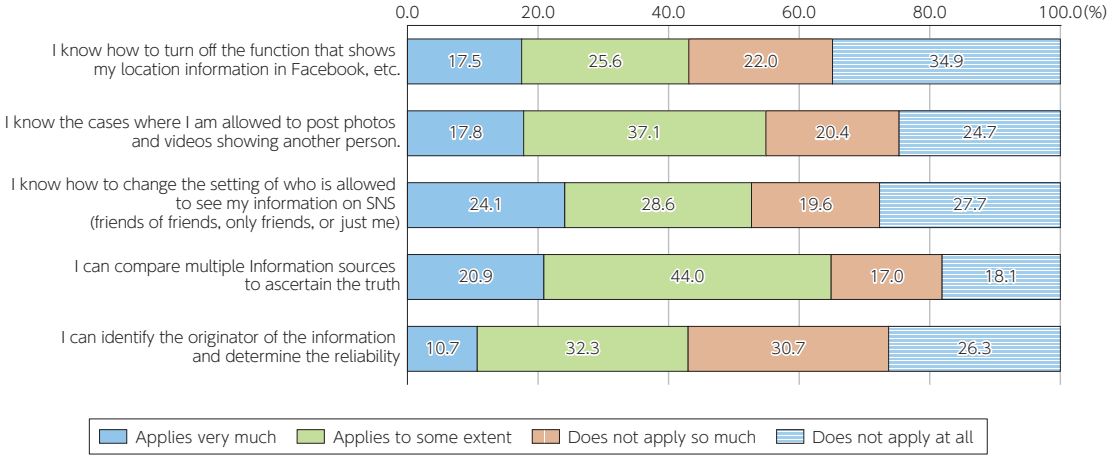
Figure 1-1-1-1 Internet Connection Method



(Source) MIC (2021) Research on the actual state of digital technology utilization during the COVID-19 pandemic and changes in user awareness

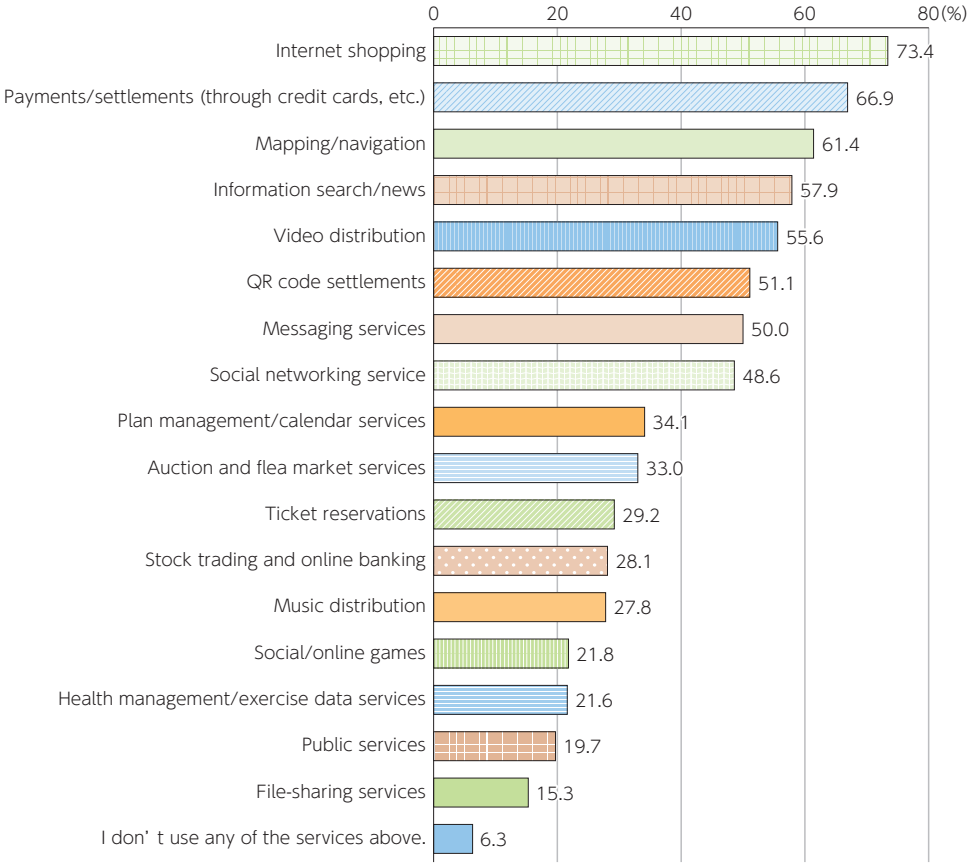
[5] MIC (2021) "Research on the actual state of digital technology utilization under the COVID-19 pandemic and changes in user awareness" In order to understand the actual state of digital technology use and changes in users' awareness caused by use of digital technologies, MIC implemented the web questionnaire survey of 1,000 residents in Japan in March 2021. We need to pay attention to the possibility that the respondents may be more experienced in the use of digital technologies compared with respondents of mail survey or field survey. Some of the questions include respondents in the United States, Germany and China.

Figure 1-1-1-2 Information Literacy regarding Use of SNS



(Source) MIC (2021) "Research on the actual state of digital technology utilization during the COVID-19 pandemic and changes in user awareness"

Figure 1-1-1-3 Internet services for daily use



(Source) MIC (2021) "Research on the actual state of digital technology utilization with COVID19 and changes in user awareness"

gation" that is used when travelling, "information search/news" for information gathering and "video distribution" for entertainment, etc. In this way, Internet-based services are used in various fields, and only 6.3% of the respondents do not use any such services. The result indicates that use of digital technologies is far-ranging in everyday life. The most used services are related to daily life and entertainment (Internet shopping, payment/settlement, video distribution). On the other hand, some services including public services (19.7%) are underutilized.

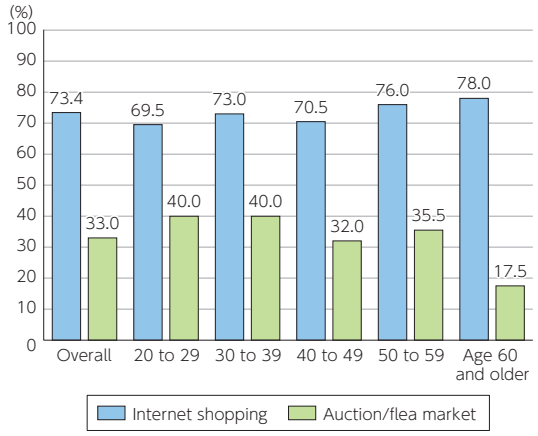
(b) Use situation of Internet-based services (individual services)

As described above, Internet-based services are widely used. Does their use situation vary? We examined whether there is any age difference in the use situation of individual services.

i) Internet shopping and auction/flea market

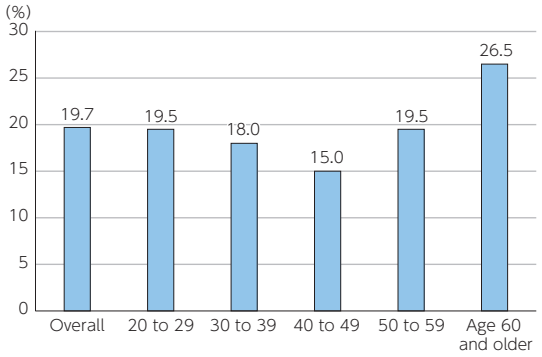
First, we examined the use of Internet shopping and auctions/flea markets, which are tools close to consumer life (Figure 1-1-1-4). The overall usage rate of Internet shopping is 73.4%. The rate is 70% to around 80% for all

Figure 1-1-1-4 Use Situation of Internet Shopping and Auctions/Flea markets



(Source) MIC (2021) "Research on the actual state of digital technology utilization during the COVID-19 pandemic and changes in user awareness"

Figure 1-1-1-5 Use Situation of (Online) Public Services



(Source) MIC (2021) "Research on actual state of digital technology utilization during the COVID-19 pandemic and changes in user awareness"

age brackets with little generational differences. We can say that Internet shopping is widely used by all generations. The overall utilization rate of auctions/flea markets is only 33.0%. The rate is highest for the 20-29 and 30-39 age brackets and slightly declines in higher age brackets.

ii) Public services

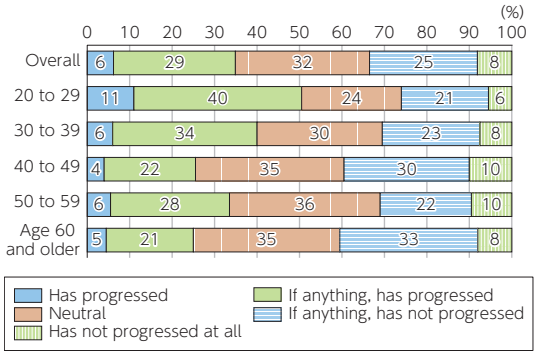
Next, let us look at the use of (online) public services (online services provided by national government and local governments) that are not much used (Figure 1-1-1-5). The overall usage rate of (online) public services is 19.7%. By age, the rate of "age 60 and older" is highest and the rate of 40-49 is lowest. While the usage rate of many other services is higher among younger people, it is characteristic for public services that the usage rate of the 60 and older age bracket is high.

2. Expectation for Utilization of Digital Technologies

What is people's expectation for the progress of digitalization?

The survey asked impressions of the progress of digitalization in Japan (Figure 1-1-2-1). Overall, positive answers are on a level with negative answers.

Figure 1-1-2-1 Perception of Progress of Digitalization in Japan (by age)



(Source) MIC (2021) "Research on actual state of digital technology utilization during the COVID-19 pandemic and changes in user awareness"

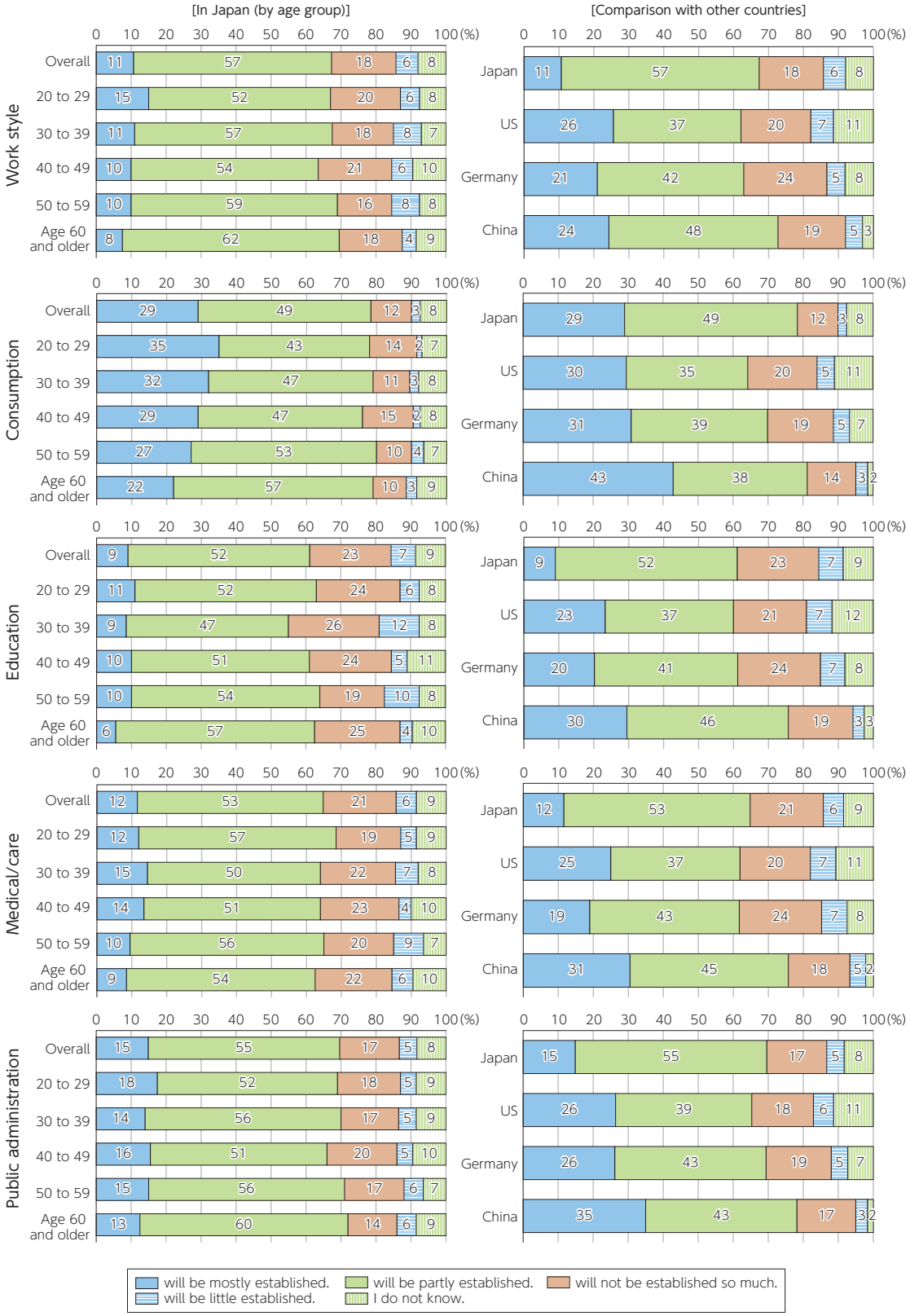
3. Cautious Views Concerning Whether Utilization of Digital Technologies Will Continue

(1) Will the changes resulting from utilization of digital technology continue?

Also, will the changes in various fields resulting from digitalization take root? A questionnaire survey including overseas respondents was conducted on whether the changes will take root in the five fields of "work style," "consumption," "education," "medical/care" and "public administration" (Figure 1-1-3-1).

Overall, over 60% of the respondents in Japan (by age) answered "will be mostly established" or "will be partly established" The proportion is nearly 80% for "consumption" that includes Internet shopping and cashless settlement. However, the proportion of the respondents answering "will be mostly established" is around 10% for the sectors other than "consumption."

Figure 1-1-3-1 Will the Changes Resulting from Digitalization be established? (by sector)



(Source) MIC (2021) "Research on the actual state of digital technology utilization during the COVID-19 pandemic and changes in user awareness"

4. Challenges for Utilization of Digital Technologies

What are the challenges for further progress in utilization of digital technologies?

(1) Causes of delay in digitalization

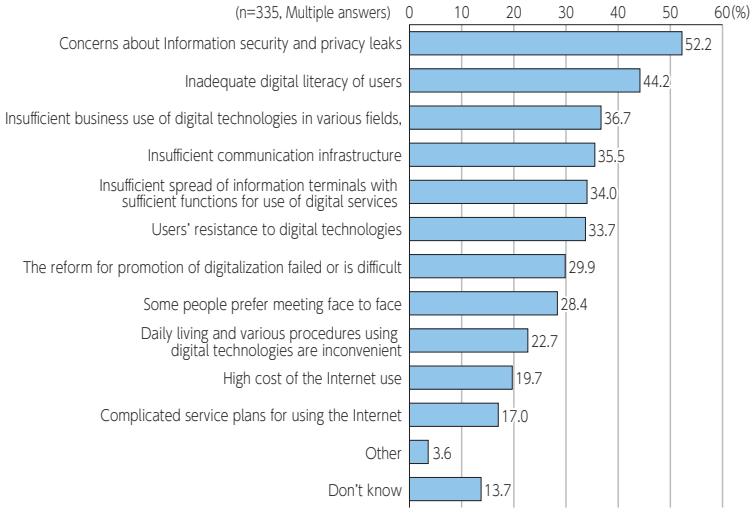
To a question of the 2021 MIC survey asking for causes of delay in digitalization, the most frequent answer was "concerns about information security and privacy leaks" followed by "inadequate digital literacy of users." "Insufficient business use of digital technologies," "insufficient communication infrastructure," "insufficient spread of information terminals" and "users' resistance to digital technologies" answers were frequent in this order. Answers regarding concerns about or resistance to digitalization as well as digital literacy ranked high (Figure 1-1-4-1).

(2) Perception, Challenges and Barriers Regarding Use of Personal Data

According to a survey taken up by the 2020 Information and Communications White Paper, over 80 percent of consumers in Japan answered that they felt uneasy about providing personal data. The proportion remained higher compared with Western consumers. Thus, at this point, how do consumers perceive the provision of their information to enterprises?

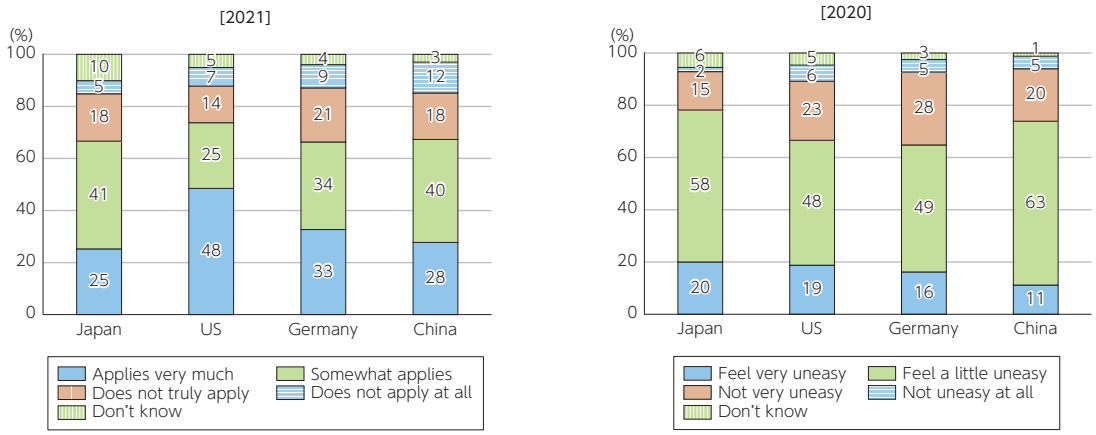
To the question of what they think about providing personal data when using services/applications provided by enterprises, over 60% of respondents of all countries answered they felt uneasy (Figure 1-1-4-2). By country, the percentage is highest in the United States at 73%, followed by China at 68%. In Japan the proportion of the respondents feeling uneasy fell about 12 points from 78% to 66%, which shows slightly weakening resistance to providing personal data. The proportion dropped by 6 points from 74% to 68% in China, whereas it increased by 6 points (67% to 73%) in the United States and by 2 points (65% to 67%) in Germany. Differences among countries are narrowing.

Figure 1-1-4-1 Perceived Causes of Delay in Digitalization in Society



(Source) MIC (2021) "Research on the actual state of digital technology utilization during the COVID-19 pandemic and changes in user awareness"

Figure 1-1-4-2 Uneasiness about Providing Personal Data When Using Services/applications



(Source) MIC (2021) "Research on the actual state of digital technology utilization during the COVID-19 pandemic and changes in user awareness"

(3) Support for Utilization of Digital Technologies

a. Current state of digital technology utilization by the elderly

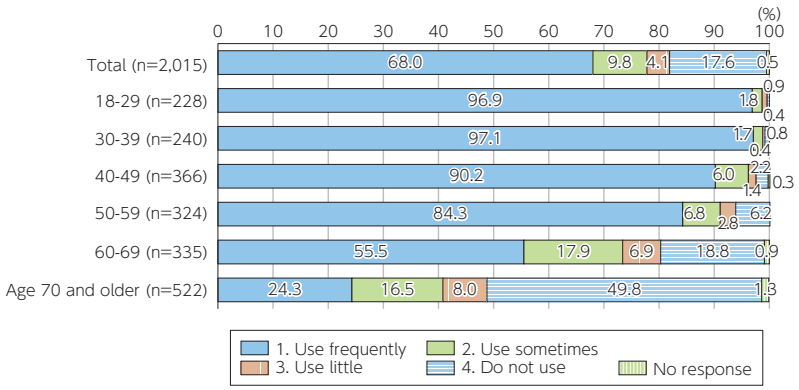
This section analyzes the current state of digital technology utilization by elder citizens based on a survey implemented by the Cabinet Office. First, regarding use of smartphones and tablets, the sum of "use frequently" and "use sometimes" is 77.8%. By age, the proportion is nearly 100% at 98.7% for the 18-29 bracket, while the utilization rate falls with higher age: to 73.4% for age 60 to 69 and as low as 40.8% for 70 and older (Figure 1-1-4-3).

b. Reasons for not using digital technologies

Asked for the reason for not using smartphone/tablet, answers by age 70 and older respondents were "I think they are not necessary for my life," "I don't know how to use them" and "I think I could ask my family members to use them if necessary," which are frequently in this order (Figure 1-1-4-4).

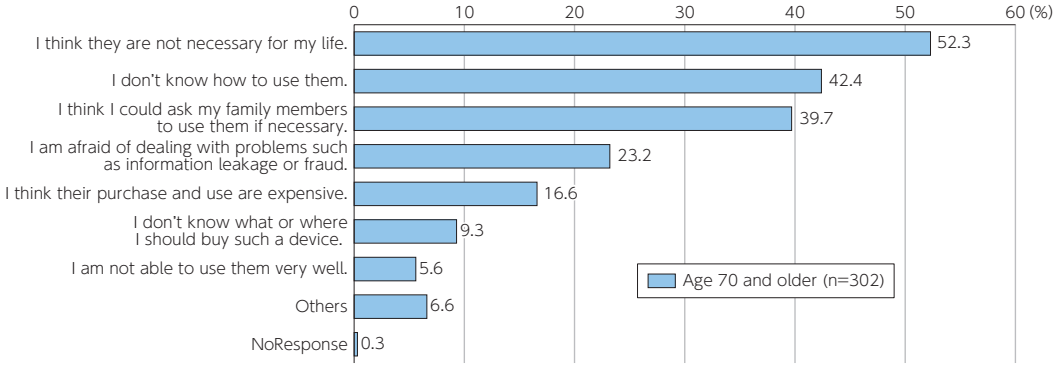
This way, a certain number of the elderly do not feel the need for smartphones/tablets, or don't know how to operate them, or think they could ask another person if necessary. However, digitalization provides various advantages including improved convenience of everyday life. Because delay in their use could prevent them from enjoying the advantages and entail a risk of being left behind in a digital society, support for utilization of digital technologies should be a prioritized issue.

Figure 1-1-4-3 Smartphone or tablet use (by age)



(Source) Prepared by the Ministry of Internal Affairs and Communications from Cabinet Office (2020) "Opinion Poll on ICT Device Use"

Figure 1-1-4-4 Reasons for not using smartphones or tablets (age 70 and older)



(Source) Prepared by the Ministry of Internal Affairs and Communications from Cabinet Office (2020) "Opinion Poll on ICT Device Use"

5. Summary

As examined above, it is safe to say that the infrastructure has been developed for utilization of digital technologies. Use of Internet-based services is mainly in the field of everyday living and entertainment. In this context of digital technology utilization, people hold high expectations for digitalization in the future. However, the view that digitalization "changes will mostly continue" remains around 10% in all fields excluding "consumption."

To address this situation, it is important to promote actions to establish digitalization, but promotion of digitalization faces anxiety about information security and privacy leaks, insufficient literacy and other challenges. It is necessary to further promote the digitalization of Japan by solving the challenges for digitalization while taking account of the actual circumstances of the country.

Section 2 Present Status and Challenges for Digital Transformation in Corporate Activities

This section takes up current state and challenges of digital transformation in corporate activities.

1. Productivity improvement through digitalization

(1) Need for Productivity Improvement

Productivity improvement is necessary for economic prosperity through the increase of GDP per capita. Internationally, Japan's labor productivity in 2019 was the lowest among G7 countries including the United States. The annual growth rate of Japan's labor productivity was 0.2% for the period from 2012 to 2019.

(2) ICT and Improvement of Production Efficiency

a. Contribution of the information communication industry to productivity

Figure 1-2-1-1 shows changes in labor productivity (real GDP/ number of employees) (based on the prices in 2015) of the information communication industry and general industry as index with a score of 100 representing the 2000 level. The index of the information communication industry in 2009 fell 3.9 points from 150.8 in 2008 to 146.5 due to the bankruptcy of Lehman Brothers but rapidly increased to 154.1 in the following year. Later, the increase slightly slowed from 2011 to 2013 but turned upward in 2014 to rise to 185.6 in 2019.

b. Contribution of ICT solutions to productivity

Let us look at the relationship between specific ICT solutions and labor productivity[6]. According to the Communications Usage Trend Survey of the Ministry of Internal Affairs and Communications, labor productivity of business operators consistently using cloud services from 2010 to 2020 is higher compared with business operators who are not using them (Figure 1-2-1-2).

Similarly, looking at the relationship between telework introduction and labor productivity, labor productivity of business operators consistently implementing telework for the period from 2010 to 2020 is higher compared with other business operators (Figure 1-2-1-3).

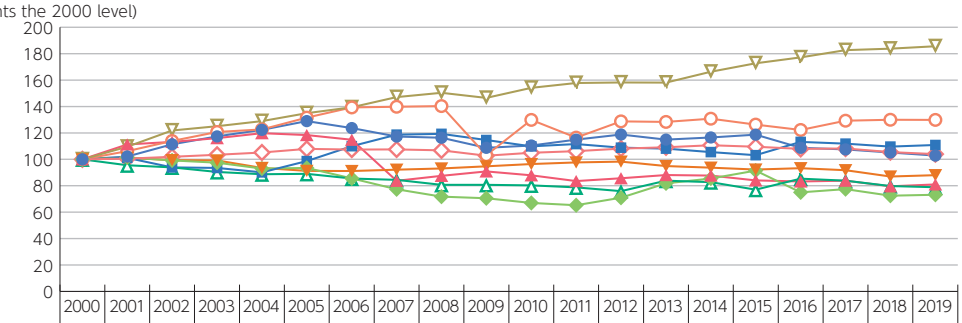
(3) Utilization of ICT for Productivity Improvement

Past efforts for productivity improvement by Japanese enterprises tend to focus on labor saving in operation and efficiency improvement of business processes and only a small number of enterprises worked on adding value to existing products/services or development of new products/services. For this reason, ICT investments were more frequently targeted to efficiency improvement of existing businesses and had only a limited effect to increase labor productivity.

For Japanese enterprises to survive in the future, it is not enough to use digital technologies as a tool for operational efficiency, but they must work for digital transformation that creates new values through new products, services, and business models, while at the same time changing the organization, culture and working style on the premise of digitalization.

Figure 1-2-1-1 Changes in Labor Productivity Index of Information Communication and General Industries

(100 represents the 2000 level)

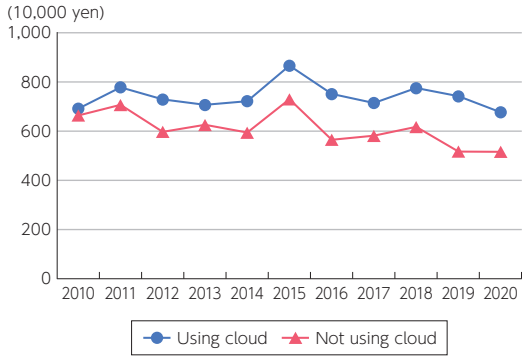


	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Commerce	100.0	102.2	111.4	117.3	122.3	128.9	123.7	117.3	116.4	108.8	110.4	115.0	118.8	114.9	116.6	118.6	108.7	107.5	105.2	102.8
Real estate	100.0	111.2	113.2	116.0	119.8	118.4	114.8	83.7	87.5	90.8	88.0	83.5	85.6	88.1	87.7	84.1	83.3	83.8	79.6	81.0
Medical, health and welfare	100.0	101.2	99.4	99.2	93.5	91.3	91.2	92.1	93.1	94.8	96.4	97.6	98.3	94.9	93.7	92.3	93.3	91.8	87.0	88.0
Construction	100.0	101.4	99.2	97.5	93.0	93.5	85.6	77.3	71.7	70.6	67.0	65.3	70.9	81.8	85.4	91.5	75.0	77.4	72.5	73.2
Business services	100.0	101.2	93.9	93.5	90.2	98.6	110.0	118.7	119.3	114.7	109.8	111.5	108.8	108.2	105.5	103.2	113.2	111.9	109.6	110.9
Transportation equipment	100.0	106.2	114.0	120.7	122.6	131.6	139.3	139.8	140.3	103.2	129.8	116.4	128.7	128.3	130.8	126.3	122.3	129.3	129.9	129.9
Personal services	100.0	95.5	93.9	90.5	88.7	89.1	85.5	84.4	80.7	80.7	80.3	78.8	75.9	83.8	82.7	77.0	85.4	83.9	79.8	78.9
ICT industry	100.0	109.5	121.8	125.1	128.9	135.0	139.4	147.1	150.4	146.5	154.1	157.8	158.2	158.1	166.3	172.7	177.2	182.7	183.8	185.6
All industries	100.0	100.5	101.9	103.5	105.2	107.9	107.4	107.5	106.8	102.7	105.0	106.1	108.1	109.1	110.6	109.6	107.9	108.2	105.5	103.9

(Source) MIC (2021) "Research on ICT Economy Analysis"

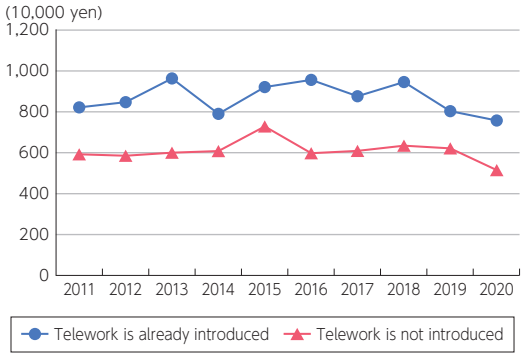
[6] Here: labor productivity = (operating profit + labor cost + depreciation) / number of employees

Figure 1-2-1-2 Relationship Between Use of Cloud Services and Labor Productivity (Changes)



(Source) MIC (respective years) "Communications Usage Trend Survey"

Figure 1-2-1-3 Relationship Between Telework Introduction and Labor Productivity (Changes)



(Source) MIC (respective years) "Communications Usage Trend Survey"

2. Digital Transformation Again Attracts Attention

(1) Contents of Digital Transformation

The definition of "digital transformation" in this white paper follows its definition in the "Declaration to be the World's Most Advanced IT Nation - Basic Plan for the Advancement of Public and Private Sector Data Utilization" (Cabinet Decision on July 17, 2020).

Introduction of digital tools to improve efficiency of specific processes in a company is called "digitization" while digitization of the entire process including the external environment and business strategies is "digitalization." Digital transformation is a concept that refers to initiatives to change social systems and organizational culture through provision of new products/services and development of new business models by utilizing digital technologies (Figure 1-2-2-1).

Past informatization/digitalization that have been implemented by enterprises (simple labor saving, automation, efficiency improvement or optimization using digital technologies) are far from digital transformation (DX). DX is a reform to create new values while breaking stereotypes in response to radical changes of society. We need to pay attention to the point that DX is a means for the enterprise to achieve specific goals and not the purpose itself.

(2) Digital Disruption

DX may cause destructive changes involving not only the company but also the industry and the entire society. For example, as a result of the market entry of digital companies, existing companies are forced to withdraw from the market. This is called digital disruption.

(3) Background of the Attention to Digital Transformation

There are four possible causes of renewed attention to DX in enterprises under the COVID-19 pandemic.

a. Changes in consumption behavior accompanying the spread of smartphones

First, sophisticated digital tools represented by smartphones have widely spread and become established as infrastructure for daily life. Because enterprises that continue business in the same manner as in the past will lose competitiveness, they need to transform to adapt to the changing business environment.

b. Threat of digital disruption

The second factor is the existence of innovation enterprises (disrupters) who can transform the power landscapes of the industry. Every industry is exposed to global competition and digitalization competition with digital companies has already started. With greatly lowered hurdles for utilization of digital technologies, there is a greater likelihood of appearance of an environment where emerging forces with digital technologies threaten existing forces.

Figure 1-2-2-1 Difference between "Digitization," "Digitalization" and "Digital Transformation"

(Source) MIC 2019 White Paper Information and Communications in Japan (partially changed)

c. Increase of data and networking including in real space

In the past, digital technologies were mostly thought to exist in the cyber space (Internet). The third factor is expansion of the use of digital technologies in real space. A future source of enterprise competitiveness will be networking through digital data. Enterprises need to generate synergy effects taking advantage of "economy of cooperation" by building networks with other enterprises, industries, people and things to create new added value.

d. Globalization of the digital market

Because services using digital technologies are rapidly deployed around the world without the constraint of distance, it is probable that digital companies at home and abroad may become competitors.

With the global spread of the COVID-19 infection, digitalization has been accelerated worldwide in order to maintain people's daily lives and economic activities. It is thought that changes in the industrial structure and business environment are also accelerated. As a means for survival of enterprises in the drastically changing business environment, attention to digital transformation is further increasing.

3. Toward Practice of Digital Transformation

In this part, the content of digital transformation implemented by enterprises and its expected effects are summarized based on literature research and hearing survey of enterprises.

(1) Contents of Digital Transformation Initiatives

Based on the definition, etc. of the "Declaration to be the World's Most Advanced IT Nation - Basic Plan for the Advancement of Public and Private Sector Data Utilization," concrete actions of digital transformation can generally be classified into the following three categories:

a. Initiatives related to organizations

Construction of a digital transformation promotion scheme in the company, establishment of a new organization (e.g. new company) for promotion, reform of consciousness in the company, cooperation with external parties including other companies, securing of budget, establishment of vision, etc.

b. Initiatives related to human resources

Securing of digital human resources (new or mid-term hiring,) improvement of in-company and outside training, encouragement of acquisition of specialized qualifications, etc.

c. Initiatives related to ICT

Utilization of AI, IoT, RPA and other digital technologies, use of ICT tools related to working-style reform, utilization of digital data, breakaway from dependence on system integrators, reform of legacy systems, etc.

(2) Effects Expected from Digital Transformation

Effects that enterprises expect from digital transformation are generally listed in the following three categories:

a. Effects in the company

Efficiency improvement and cost reduction of operations in the company, reform of the company culture and workstyle, etc.

b. Effects on the company products/services

Adding of value to existing products/services, expansion of their sales, creation of new products, services and businesses, etc.

c. Effects on external parties/customers

Strengthening of relationships with other companies (business alliance,) improvement of customer satisfaction, etc.

4. Actual Status of Digital Transformation Based on Questionnaire Results

In this part, the results of a questionnaire survey on the actual status of digital transformation targeting company monitors in Japan, the United States and Germany are introduced.

(1) Outline of the Survey

Assuming three key factors (organization, human resources and ICT) when a company implements digital transformation, the questionnaire survey of company employee monitors was conducted for comparison of the current state by country, industry, size, etc. (Figure 1-2-4-1)

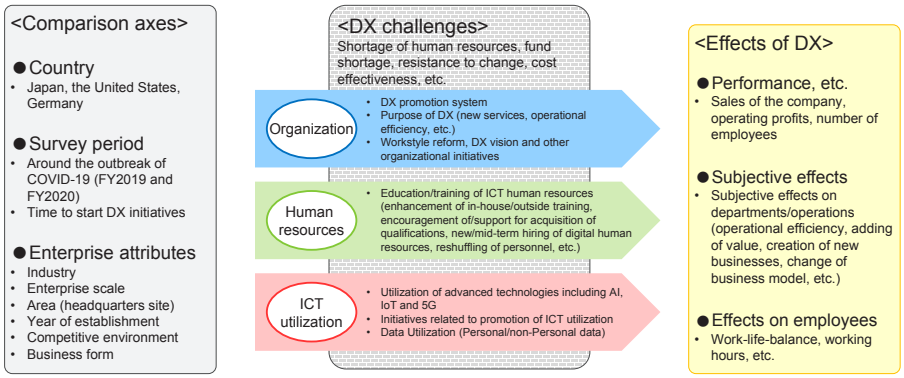
(2) Current State of Digitalization in Japan

Asked about current state of digital transformation in Japan, about 60% of responding enterprises answered "not implementing with no plan for the future." By enterprise size, the proportion is 40% for large companies, while about 70% for SMEs. Difference in awareness depending on size is apparent (Figure 1-2-4-2).

(3) Promotion Scheme of Digital Transformation

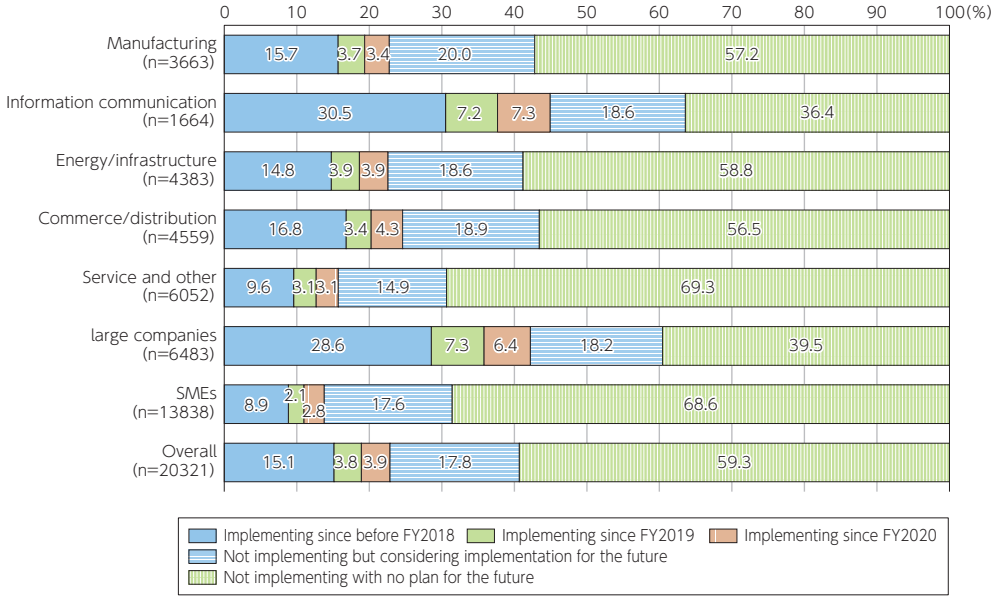
When enterprise monitors of the three countries were asked about the leader of digital transformation, "department dedicated to DX promotion" was the most common answer in all countries. In Japan, many respondents answered "department not dedicated to DX" and about 8% answered "ICT-savvy employees," which indicates that digital transformation is led at the working-level of the company (Figure 1-2-4-3).

Figure 1-2-4-1 Framework of the Questionnaire Survey



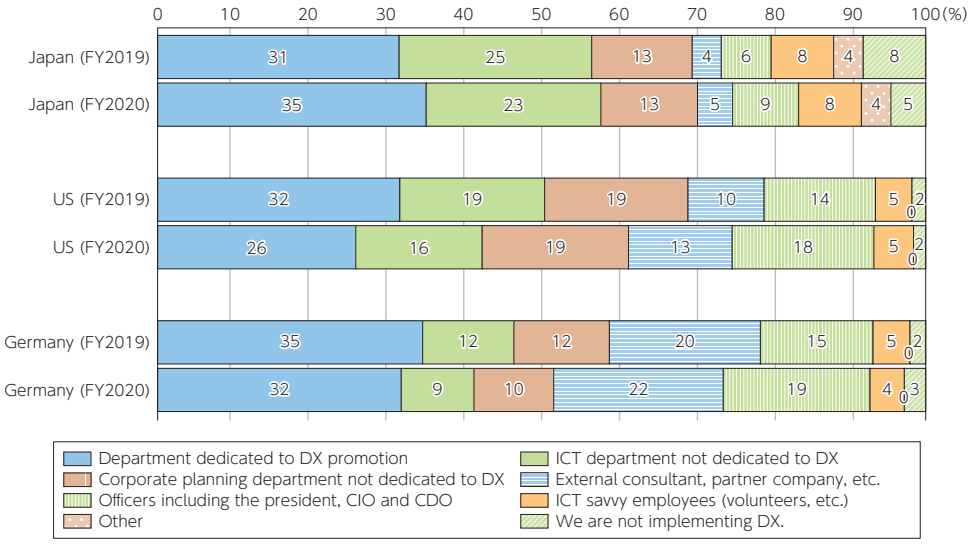
(Source) MIC (2021) "Study of Impact of Digital Transformation on Economy"

Figure 1-2-4-2 Efforts for Digital Transformation (Japan)



(Source) MIC (2021) "Study of Impact of Digital Transformation on Economy"

Figure 1-2-4-3 Leaders of Initiatives Related to Digital Transformation



* CIO: Chief Information Officer; CDO: Chief Digital Office

(Source) MIC (2021) "Study of Impact of Digital Transformation on Economy"

(4) Purpose of Digital Transformation

Respondents were asked about the purpose of digital transformation by the company (Figure 1-2-4-4). In comparison of the three countries, enterprises setting "operational efficiency/cost reduction" as their purpose are most common in both years. "Adding value to existing products/services" and "expansion of sales of existing products/services" were high in the United States and Germany in FY2019 but fell in FY2020. On the other hand, primary objectives of digital transformation, including "creation of new products/services," "creation of new businesses," "change of business model" and "improvement of customer satisfaction" were low in Japan compared with the United States and Germany. However, increase of the enterprises answering "change of business model" and "change of enterprise culture and workstyle" in FY2020 suggests gradual penetration of the meaning of digital transformation,

(5) State of Use of Digital Technologies for Work

To the question asking about ICT-related technologies/services used for digital transformation, a large proportion of respondents answered "data analysis," "cloud" and "smartphone applications." Regarding the use of the majority of ICT-related technologies/services, the proportion of Japanese companies using them is lower compared with the U.S. and German companies (Figure 1-2-4-5).

(6) State of Utilization of Digital Data

a. Utilization of personal data

Regarding utilization of digital data by enterprises, the result of asking about utilization of personal data obtained through services provided by the company is shown in Figure 1-2-4-6. Use of data increased from FY2019 to FY2020 in all countries.

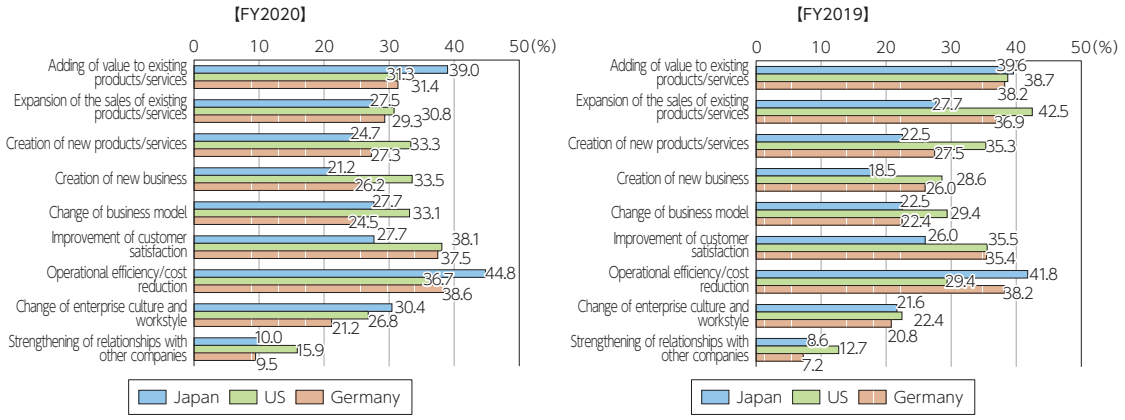
b. Utilization of industry data (data other than personal data)

Next, to the question about utilization of data other than personal data as obtained through products/services (e.g. operation status, utilization status) a little under 50% of Japanese enterprises answered "actively utilizing" or "utilizing to a certain extent," while around 70% of the U.S. and German enterprises answered "actively utilizing" or "utilizing to a certain extent" (Figure 1-2-4-7).

(7) Challenges for Digital Transformation

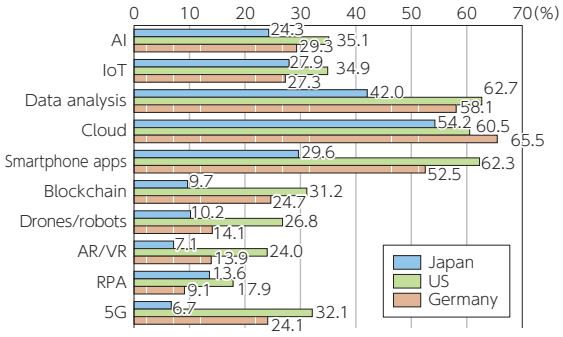
Figure 1-2-4-8 shows the result of the question about challenges for promoting digital transformation. "Human resources shortages" ranks high in every country but far and away ranks the first in Japan. Other top-ranking answers are "Uncertainties about cost performance," "Fi-

Figure 1-2-4-4 Purpose of Digital Transformation



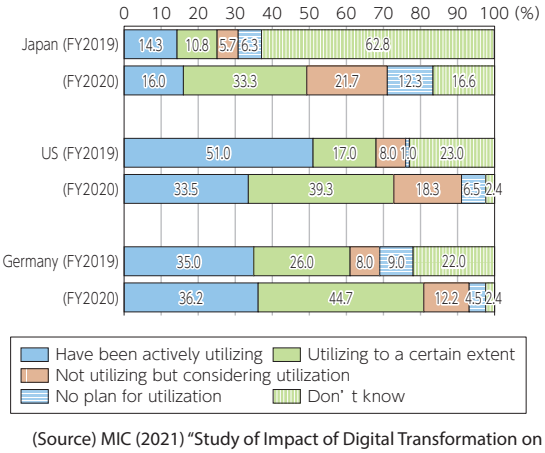
(Source) MIC (2021) "Study of Impact of Digital Transformation on Economy"

Figure 1-2-4-5 Use of Digital Technologies in Business



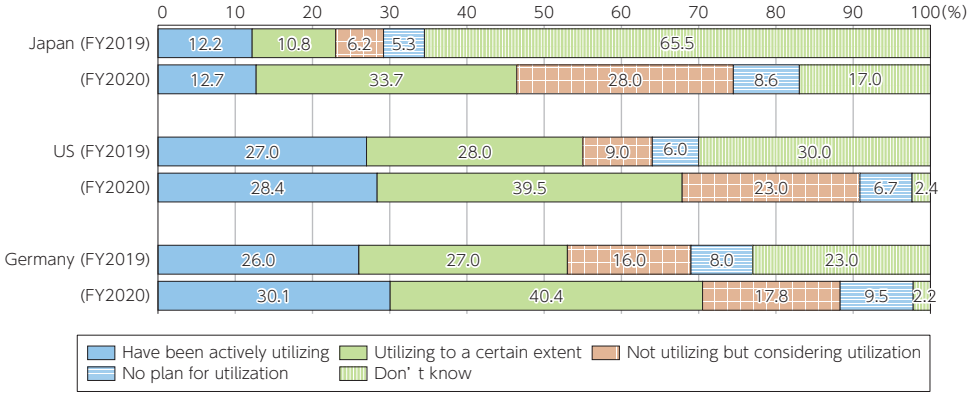
(Source) MIC (2021) "Study of Impact of Digital Transformation on Economy"

Figure 1-2-4-6 Utilization of Personal Data by Enterprises



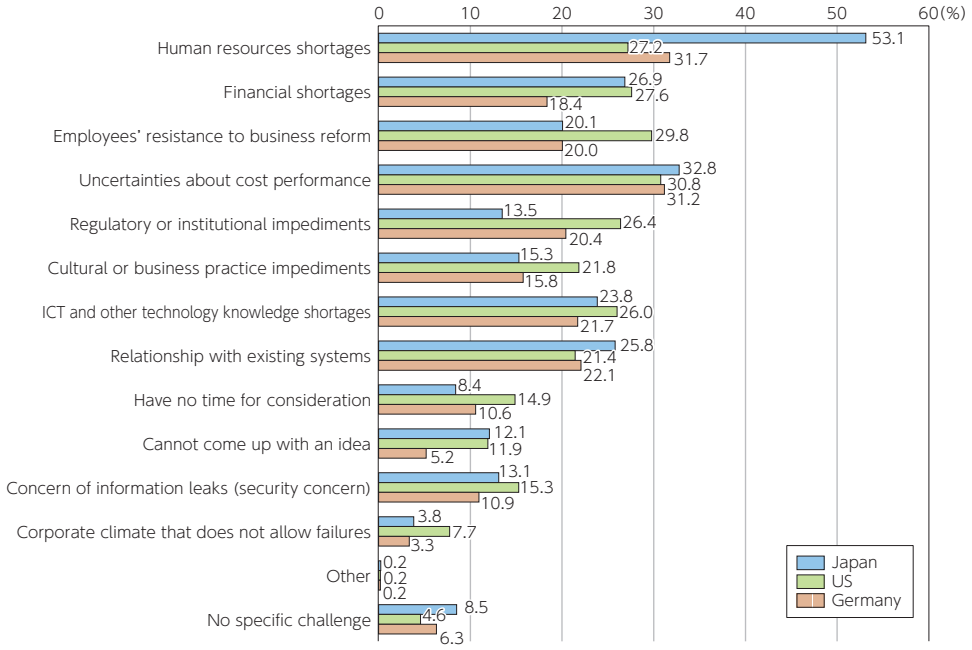
(Source) MIC (2021) "Study of Impact of Digital Transformation on Economy"

Figure 1-2-4-7 Utilization of Data other than Personal Data



(Source) MIC (2021) "Study of Impact of Digital Transformation on Economy"

Figure 1-2-4-8 Problems with promoting digital transformation



(Source) MIC (2021) "Study of Impact of Digital Transformation on Economy"

nancial shortage," "ICT and other technology knowledge shortages" and "relationship with existing systems."

In the United States, it is characteristic that "employees' resistance to business reform," "Regulatory or institutional impediments" and "Cultural or business practice impediments" are higher compared with the other two countries.

Figure 1-2-4-9 shows the result of asking how individual enterprises are working to secure and develop digital human resources that are in shortage. While many enterprises chose "enhancement of in-house/external training," in the United States, "new hiring of digital human resources," "mid-term hiring of digital human resources" and "transfer from affiliated companies" are more often cited compared with the other two countries.

As Japanese ICT human resources become concentrated in ICT companies, other companies lack human resources for digital transformation, which becomes a major issue.

(8) Effect of the progress of digital transformation

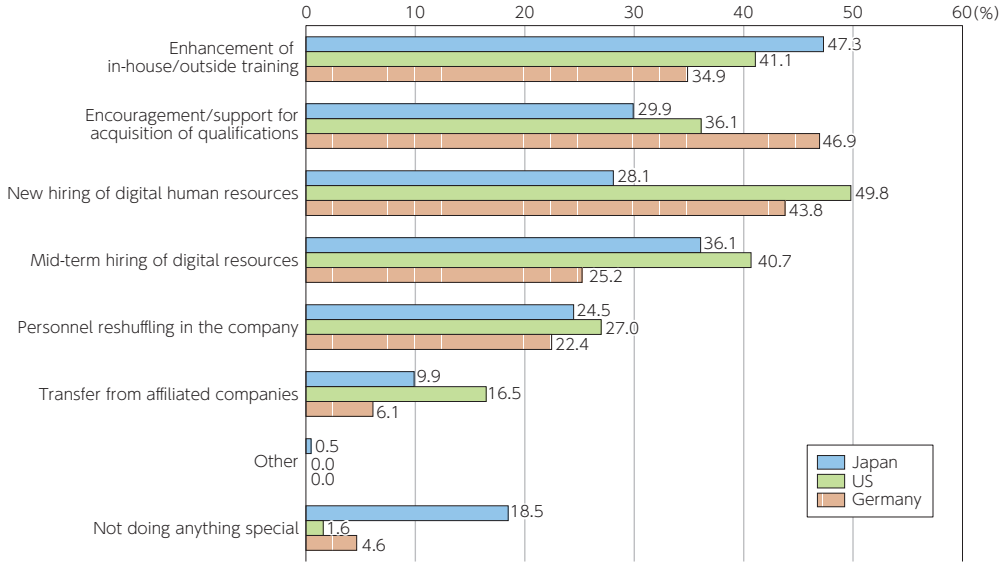
Changes of sales were estimated for a case in which Japanese companies tackle digital transformation as proactively as U.S. companies. As a result, sales growth of manufacturers were +5.7% (about 23 trillion yen) and that of non-manufacturers were +4.2% (about 45 trillion yen).

(9) Summary

The trend of digital transformation implemented by Japanese enterprises is summarized based on the survey results as follows.

It can be said that digital transformation implemented by Japanese enterprises is "inward directed" initiatives that are completed within the enterprise. In order to continue and develop the enterprise in the increasingly severe environment under the COVID-19 pandemic, and in the light of the original purpose of digital transformation, it is considered necessary to evolve their efforts into "outward directed" efforts that actively cooperate with external parties and utilize external resources with the aim of creating new services and expanding business.

Figure 1-2-4-9 Efforts for Securing/Development of Digital Human Resources



(Source) MIC (2021) "Study of Impact of Digital Transformation on Economy"

5. Changes Necessary for Digital Transformation

As the conclusion of this section, the following points are drawn for examination of the changes necessary for digital transformation implemented by enterprises.

(1) Change in the Way of Thinking in the Enterprise

It is most important to change the way of thinking in the enterprise and share the need for digital transformation. In addition, enterprises should explore problems of their business and products/services and improvement opportunities and clarify their problems.

(2) Reform of the Organization and Construction of a Promotion Scheme

Digital transformation is not simple digitalization of operations but involves changes in the business models, organizations and culture. Consequently, an initiative originally limited to a specific department may evolve into an initiative involving the entire company. For this reason, it is important to construct a system for promotion of digital transformation.

(3) Reform of Systems/Customs that Hinder Implementation

Many enterprises list regulations/systems, culture and industry customs as hindrances to digital transformation. Systems and customs limited to the company can be changed by the decision of the management.

(4) Development/securing of Necessary Human Resources

Shortage of digital human resources is pointed out often particularly in Japan. It is said that digital transformation also requires human resources who know the business and people capable of digital design with UI/UX in mind.

For Japan, it will become important to be "open-minded about human resources" which is necessary for implementing digital transformation, that is to say, utilizing outside human resources.

(5) Change of Business Models through Introduction/Utilization of New Digital Technologies

Construction of a business model suitable to the new cost structure by digital enterprises who use digital technologies poses a great threat to existing enterprises. In order to be competitive, it is important for existing enterprises to change their business models through introduction/utilization of new digital technologies.

(6) Other

There is an opinion that existence of legacy systems is a barrier for digital transformation. It is important to replace legacy systems that were built based on the conventional business procedures and change them to operations based on utilization of resources on the web including the cloud.

Section 3 Present status and challenges for digitalization in public sector

This section takes up the field of administration in the public sector. After summarizing the history of promotion of e-government and local e-governments in Japan and a review of the public sector's response to the COVID-19 pandemic and the direction of future actions, the section shows actions necessary for construction of a digital government in the future.

1. Japan's Efforts for Digital Government

(1) The History of Promotion of e-government and Local governments in Japan

Looking back the history of promotion of e-government and local governments in Japan, we can divide the history roughly into five periods based on the characteristics of the goals and prioritized measures (Figure 1-3-1-1).

a. Efforts before the COVID-19 Pandemic

Promotion of e-government and local e-governments in Japan began in earnest from the e-Japan Strategy (2001). Under the e-Japan Strategy, the government started with digitalization within the government and development of network infrastructure, which form the basis of online procedure, as well as development of laws and rules. Because the infrastructure development advanced ahead of the initial schedule, the government promoted efforts to expand use of online application/notification to the government from around the time the e-Japan Strategy II was formulated (2003). From around 2009, IT governance was strengthened including introduction of the government CIO system, while at the same time open data promotion was started as a priority measure for establishment of open government. After the enactment of the Basic Act on the Advancement of Public and Private Sector Data Utilization in 2016 and formulation of the "Declaration to be the World's Most Advanced IT Nation - Basic Plan for the Advancement of Public and Private Sector Data Utilization" in May 2017, the first editions of the "Digital Government Strategy" and "Digital Government Action Plan" were formulated and efforts have been promoted toward "Digital Government" to reform administrative services assuming digitalization based on the Act on the Promotion of Administration Using Information and Communications Technology that was enforced in December 2019.

b. Status of the study toward a resilient digital society after the COVID-19 pandemic

(a) Development of the study

"Declaration to be the World's Most Advanced Digital Nation - Basic Plan for the Advancement of Public and Private Sector Data Utilization" that was made public in July 2020 provided new basic principles and policies based on a total revision of the IT Basic Act and aimed to fundamentally strengthen cross-functional efforts across the government for digitalization of the entire society. Based on the above, Prime Minister Suga at the ministerial conference in September 2020 instructed the establishment of the Digital Agency and fundamental revision of the IT Basic Act in order to integrate the vertical administrative structure. In response, the Working Group on Digital Reform-related Bills that was set up under the

Figure 1-3-1-1 History of Promotion of e-government and Local governments in Japan

	From around 2000	From around 2003	From around 2009	From around 2017	From around 2020
	Promoting **infrastructure and system development** toward the goal to become the world's most advanced IT nation within five years	Working to **improve convenience and services** for people through utilization of IT infrastructure	Promoting transparency and accessibility improvement through **enhancement of governance and openness**	**Aspiring for digital government** that reviews the state of administration itself on the premise of digitalization	**Aspiring for "human-friendly digitalization that leaves nobody behind"**
Social environment	• IT revolution (from the latter half of the 1990s)		• Progress of digital technologies • Financial crisis (2008) • Great East Japan Earthquake (2011)	• Advent of the age of massive data flow	• **Expansion of the COVID-19 infection**
IT strategies (overall)	• IT Basic Act (2000) • e-Japan Strategy (2001)	• e-Japan Strategy II (2003) • New IT Reform Strategy (2006)	• i-Japan Strategy 2015 (2009) • New Strategy in Information and Communications Technology (2010) • Declaration to be the World's Most Advanced IT Nation (from 2013)	• Basic Act on the Advancement of Public and Private Sector Data Utilization (2016) • Declaration to be the World's Most Advanced IT Nation - Basic Plan for the Advancement of Public and Private Sector Data Utilization (from 2017)	• Overhaul of the IT Basic Act • Basic Policy of Reform Toward the Formation of a Digital Society (2020)
e-government/local e-governments	• Basic Plan for Promotion of Informatization of Administration (1994)	• e-government Construction Plan (2003) • e-Government Promotion Plan (2006) • Guidelines for Promotion of Local e-Governments (2003) • New Guidelines for Promotion of Local e-Governments (2007)	• Basic Policy on Promotion of Electronic Administration (2011) • 10 Guiding Principles for Acceleration of Initiatives for Local e-Governments (2014)	• Digital Government Strategy (2017) • Digital Government Action Plan (2018)	• Digital Government Action Plan (2018, revised in 2020) • DX Promotion Plan for Local Governments (2020)
Administrative services	• Three acts related to going online (2002) • Start of e-Gov operation (2001)	• Promotion of initiatives toward "online utilization rate 50% or higher" • Start of initiatives toward one-stop services • Electronic Documents Act (2004)	• Expansion of administrative service kiosk terminals, issuing of resident card in convenience stores, etc.	• Digital Procedure Act (2019) • Promotion of administrative service reform based on the Three Principles of Digitalization	• Fundamental revision of documents/sealing/interview regulations • Promotion of online procedures utilizing "Pittari service" of Mynaportal
Mechanism of personal identification		• Start of issuance of basic resident registration card (2003) • Start of JPKI operation (2004)	• Enactment of the individual number act (2013) • Start of the use of individual number (2016)	• Start of operation of Mynaportal (2017) • Start of operation of My Key platform (2017) • Start of private use of JPKI (2017)	• Development of systems related to individual number • Promotion of use of individual number • Enhancement of the functions of individual number cards • Promotion of issuance of individual number cards
Infrastructure /information systems	• Start of operation of Kasumigaseki WAN (1997) • Start of operation of LGWAN (2001) • Start of operation of the resident registry (2002)	• Promotion of optimization of the common inter-ministry business system • Promotion of joint outsourcing by local governments	• Reform of the government information system • Start of operation of the government's common platform (2013) • Promotion of efforts toward local governments' cloud	• Introduction of the principle of "cloud by default" • Promotion of efforts toward local governments' cloud	• Development of the government network • Review of the "three-layer measures of local governments" • Full use of cloud services • Standardization and common use of local governments information systems
Organization, human resources and governance	• CIO liaison conference was set up (2002)	• Expert examination committee and e-government evaluation committee were set up. • PMO was set up in each ministry.	• Government CIO system (2012) • CIO assistant pool system was introduced (2013) • Development of IT dashboard (2013)	• Digital Government Technology Review Meeting was set up (2018) • Start of the government CIO review (2019) • Strengthening of IT governance of individual ministries	• Start of the Digital Agency (2021) • Acceleration of unification of the government's information system-related budgets and procurement
Data utilization			• Formulation of the e-administration open data strategy (2012) • Start of the operation of data catalog sites (2014) • Open Data 2.0 (2016)	• Basic Guidelines for Open Data (2017) • Public-private roundtable conference on open data	• Promotion of data strategy (e.g. establishing bases including base registry, platforms and trust framework)

(Source) MIC (2021) "Research on Digital Government Promotion"

ministerial conference published the "Report of the Working Group on Digital Reform-related Bills" in November of the same year. The data strategy task force set up under the conference published "the First Report of the Data Strategy Task Force" in December of the same year.

(b) Review of the IT Basic Act and Promotion of Digital Reform by Establishment of the Digital Agency

In December 2020 the Cabinet decided the "Basic Policy for Reforms toward the Realization of a Digital Society." The basic policy calls for "human-friendly digitalization that leaves no one behind," in which a diversity of people can choose services that meet their needs in order to contribute to everyone's happiness. It presented five items: (1) development, maintenance and enhancement of networks; (2) development of a data flow environment; (3) improvement of service quality in the government administration and the public sector; (4) human resource development and promotion of education/learning, and; (5) formation of a digital society for safe participation.

In December 2020 the revised "Digital Government Action Plan" was decided by the Cabinet. The MIC gave shape to the priority items and content of individual measures of the plan for local governments and put together support measures by the MIC and relevant national government agencies. The ministry published the result as the "Local Government Digital Transformation Promotion Plan ("Local Government DX Plan") in the same month.

Later in February 2021 six bills related to digital reform[7] which include the bill for establishment of the Digital Agency were decided by the Cabinet, enacted upon passage through the Diet in May of the same year, and promulgated.

In addition, the "Priority Plan toward the Realization of a Digital Society" was decided by the Cabinet in June of the same year. In view of the enforcement of the Basic Act on the Formation of a Digital Society on September 1 of 2021, the plan shows the items that should be incorporated at the present in the "Priority Plan on Formation of a Digital Society" that is provided in Article 37 Paragraph 1 of the Act. The program includes the digital society sought by Japan and the promotion system for this purpose.

(2) Initiatives as Individual Measures in the Past

a. Administrative services

(a) Placing the government procedures online

In order to improve the convenience of administrative procedures and simplify and streamline administrative management under the Act on the Promotion of Administration Using Information and Communications Technology enforced in 2019, individual government agencies have been working to make administrative procedure online, while at the same time promoting initiatives for further improvement of the convenience of online procedures. "The Digital Government Action Plan" formulated in 2020 requires further acceleration of digitalization for prevention of the spread of infections and establishment of new lifestyles, while at the same time working for further improvement of the convenience of existing online procedures.

(b) Placing local government procedures online

In March 2020 the "Guidelines on promotion of Online Use" was revised to show the basic idea of promotion for further use of online application and notification procedures at local governments. "Local governments DX Plan" indicates that 31 procedures (procedures especially contributing to the improvement of convenience for people) will be enabled online by using individual number card from Mynaportal at all local governments in principle by the end of FY2022, and that other procedures will be placed online work as well.

b. Information collaboration and authentication base

(a) Personal data collaboration and authentication base

In response to the enactment of the acts related to individual numbers in May 2013, use of individual numbers and issuance of individual number cards started in January 2016. This was followed by the start of operation of the My Key Platform that is the basis of multifunctionality of individual number cards in September 2017. Based on a review of cash payment methods to applications for income supplements to address the COVID-19 pandemic, which include to promote fundamental improvement of the individual number system and digital bases of the central and local governments toward realization of prompt and sure payments in emergencies, the "Digital Government Action Plan" was revised and "Guidelines on Digitalization of the Central and Local Governments" are attached to the revised action plan. Based on the schedule of the guidelines, the government agencies are expected to promote initiatives.

In order to promote the spread of individual number cards, the government started a consumption revitalization measure using Myna Point in September 2020. The other measure includes sending an application form with a two-dimensional cord to people who have yet to obtain an individual number card from November 2020 to March 2021. Methods for installation of individual number card functions (electronic certificate) on smartphones has been studied toward realization within FY2022.

(b) Corporation data collaboration and authentication base

In order to promote once-only procedures for corpora-

[7] Basic Act on the Formation of a Digital Society (Act No.35 of 2021,) the Act on the Establishment of the Digital Agency (Act No.36 of 2021,) the act on the arrangement of related laws for the formation of a digital society (Act no.37 of 2021,) the act on registration of saving accounts for prompt and sure payment of public benefits (Act. No.38 of 2021,) the Act on management of savings account by using individual numbers based on the intentions of the depositers (Act No.39 of 2021) and the Act on standardization of local government information systems (Act No.40 of 2021).

tions, the Ministry of Economy, Trade and Industry started operation of "Corporation Information (current gBizINFO)" which is posting corporation information held by individual government agencies by using corporate numbers as common code in January 2017. Since then, the ministry has been working toward realization of a corporation digital platform consisting of authentication, procedures, sharing and other layers using corporation numbers as the key.

c. Internal administrative affairs and information systems

(a) Efficiency improvement of the government information systems

"Declaration to be the World's Most Advanced IT Nation - Basic Plan for the Advancement of Public and Private Sector Data Utilization (2017)" presents "introduction of the cloud by default principle" and requires full use of cloud service for the government information systems. The "Digital Government Action Plan" revised in 2020 requires the ministries to continue to consider use of various cloud services in principle when developing a government information system based on the policy to use cloud services. In order to support the use, the plan sets forth development of an environment for use of multiple cloud services that provide common platform/functions (Government Cloud) and early start of its operation.

(b) Efficiency improvement at local governments

i) Promotion of standardization of operation processes and information systems at local governments

It has been pointed out that separate customization of backbone information systems of local governments for the purpose of efficiency improvement is preventing smooth joint use through the cloud. The "Basic Policy for Reforms toward the Realization of a Digital Society" of December 2020 indicated that the Digital Agency in cooperation with the MIC shall conduct planning and general coordination of standardization of the information systems of local governments toward a nationwide shift to the cloud. In addition, the revised Digital Government Action Plan indicated that the relevant ministries shall formulate standard specifications of the backbone systems that process 17 key operations of local governments under the basic policy to be formulated by the Digital Agency. The "Local Governments DX Program" indicated that in addition to presenting the policy on overall procedures toward smooth migration to the standard systems, points of consideration in review of business process operation based on the standard specifications will be mentioned in the "Manual of Local Governments DX Promotion (tentative)."

In May 2021, the "Act on Standardization of Information Systems of Local Governments" was enacted. In response, the "Priority Plan toward the Realization of a Digital Society" indicated formulation of the basic policy provided by the act and proceeding with the work of formulation of standardization references based on the basic policy.

ii) Promotion of use of AI/RPA by local governments

The revised "Digital Government Action Plan" indicated that AI, RPA and other digital technologies should be actively used in order to continue to provide sustainable administrative services with limited management resources. Based on the indication, the "Local Government DX Program" took up the "Promotion of use of AI/RPA by local governments" as one of its priority initiatives.

d. Organization, human resources and governance

In order to change vertical segmentation of ministries and departments in e-government initiatives, the Government Chief Information Officer (Government CIO) was established in the Cabinet Secretariat in 2012.

i) Organization of the Digital Agency

The "Basic Policy for Reforms toward the Realization of a Digital Society" described inauguration of the Digital Agency, and listed its functions: (1) Strong headquarter function with general coordination authority (e.g. recommendation) regarding individual ministries; (2) function of planning including formulation of basic policies regarding formation of a digital society and; (3) function of planning and supervision of government-wide systems, while appropriating its own budget and executing operations including development and management of prioritized systems. The Policy deemed the agency an organization under the direct control of the cabinet and provided functions to execute affairs.

ii) Securing of digital human resources

The Basic Policy presented "securing of digital human resources" as one of the affairs of the Digital Agency and indicated development of an environment for talented personnel to build their careers while changing their jobs in different sectors (private, local and central governments) and nurturing of an organizational culture for public and private digital human resources to do their work in effective cooperation.

iii) Acceleration of the unification of the information system-related budgets of the government

"Report of the Task Force of the Working Group on Bills related to Digital Reform" indicated "integrally carry out reform of administrative services from users' perspective and business system reform, while at the same time promoting unification/integration of the government information systems to facilitate linkage with private systems." In response, the guidelines on digitalization of the central and local governments divide government information systems into the three categories of "Digital Agency systems," "Joint project systems of the Digital Agency and ministries" and "systems of individual ministries," and presented a policy to efficiently develop information systems while ensuring their unity by integrating and supervising projects related to the systems.

iv) Promotion of telework

The revised "Digital Government Action Plan" presents the goal for the government to establish an organizational system by FY 2025 that can respond to the "new normal lifestyle" by utilizing telework and can provide necessary public services in any environment.

"Local Government DX Program" also includes "promotion of telework" in its priority initiatives.

e. Data utilization

In May 2017 the IT Strategic Headquarters formulated the "Basic Principles on Open Data" that provide principles including disclosure of all data held by the government agencies as open data.

"The First Report of the Data Strategy Task Force" presents its data strategy vision as the "human centric society that balances economic development and solution of social challenges (creation of new values) on the premise of systems (digital twins) that highly integrate physical space (real space) and cyberspace (virtual space)" and indicates that this exactly coincides with the vision of Society5.0 sought by the Government of Japan.

2. Current State of Issues and Precedents

(1) Current State of the Central and Local Governments of Japan

In order to analyze the results and issues of the past digitalization of public administration in Japan and to understand the actual conditions at present regarding the promotion of digitalization in the future, we collected, analyzed and compiled the results of various questionnaire surveys conducted by the central and local governments.

a. Administrative services

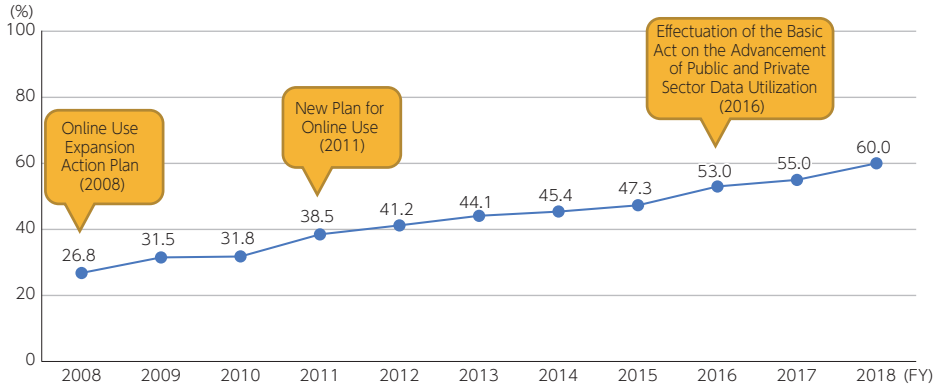
(a) Present state of online procedures at the government

Rate of utilization of online procedures (proportion of the number of usages of available online procedures) of the government is gradually increasing as shown in Figure 1-3-2-1.

(b) Present state of online procedures at the local governments

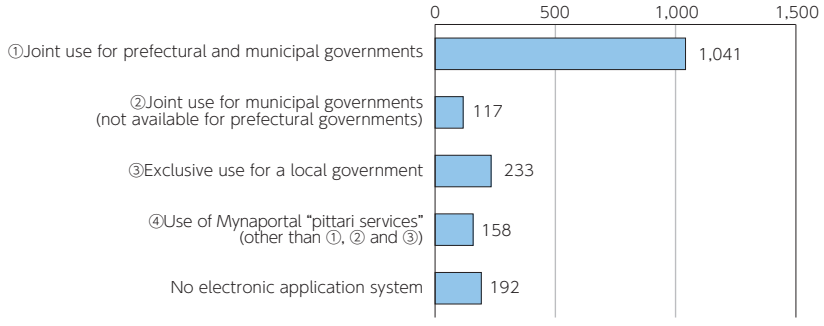
The development status of electronic application systems at municipalities as of April 2020 is shown in Figure 1-3-2-2. Most of the systems are joint use by the prefecture and its municipalities. 192 municipalities do not have any electronic application system.

Figure 1-3-2-1 Online service use rate (online usage share of procedures available for online application) trend for national government procedures



(Source) Ministry of Internal Affairs (2021) "Research on Digital Government Promotion"

Figure 1-3-2-2 Status of electronic application system development at local governments (As of April 1,2020)



(Source) MIC (2021) "Research on Digital Government Promotion"

b. Information collaboration and authentication base

Changes in the total numbers of issuance of basic resident registration cards and individual number cards and their ratio to the total population are shown in Figure 1-3-2-3. While use of basic resident registration cards only spread up to 7.6% of the population, individual number cards spread to 31.7% as of the end May 2021. The number of the total effective applications for individual cards received is 49,913,618 and the ratio of the number of applications to the population is 39.3% as of the end of the month.

The number of the issued individual number cards in 2020 was 15,579,073 increasing 4.1-fold from the previous year. Issuance per year rose to a record high. This may be attributed to the effect of sending application forms to people who have yet to acquire the card and Myna Point program. The government is working to "distribute the cards to almost all people by the end of FY2022." It is necessary to further promote the spread of the cards.

c. Internal administrative affairs and information systems

(a) Status of reduction in the running cost of the government information systems

Individual ministries are working on cost reduction based on the "Roadmap of the Reform of the Government Information Systems." They are expected to meet the goal set in 2013: reduction rate of the running cost of the government information systems of 21.4% (-83,739 million yen) from the FY2013 level at the end of FY2018. The goal is expected to be met because the reduction rate is 29.4% (-115,269 million yen) in the out year (FY2021).

(b) Introduction status of the Local Government Cloud

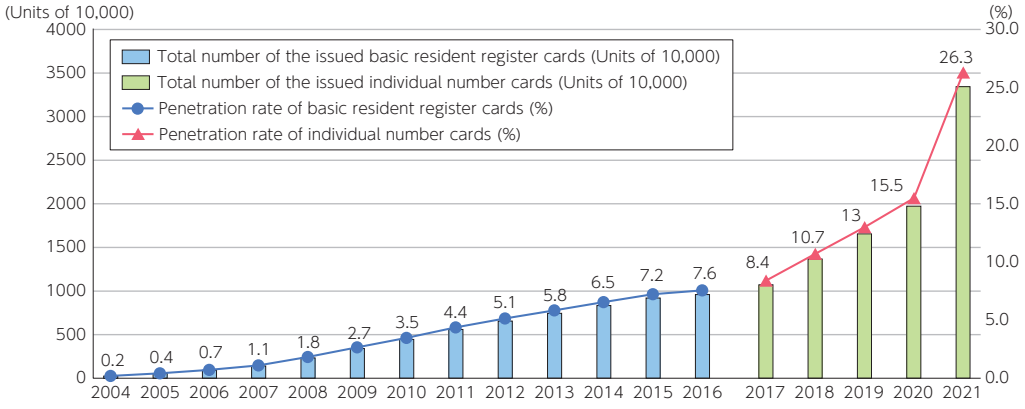
"Economic and Financial Reconstruction Program – Reform Schedule" (2015) presented a goal to "double the number of local governments introducing the Local Government Cloud from 550 to about 1000 by the end of FY2017." As of April 2018, the number reached 1,060 and the goal was accomplished.

In response to the goal to "increase the number of local governments introducing the cloud to 1,600 and the Local Government Cloud to 1,100 respectively by the end of FY2023" set by the "Declaration to be the World's Most Advanced Digital Nation - Basic Plan for the Advancement of Public and Private Sector Data Utilization (2018)" the government has promoted further introduction (Figure 1-3-2-4).

(c) Status of AI・RPA introduction

The "Digital Government Action Plan" revised in December 2020 indicated that local governments should actively use digital technologies including AI and RPA in the future. As of FY2020, the ratio of prefectures that have introduced AI increased to 68% and the ratio of designated cities was 50%.

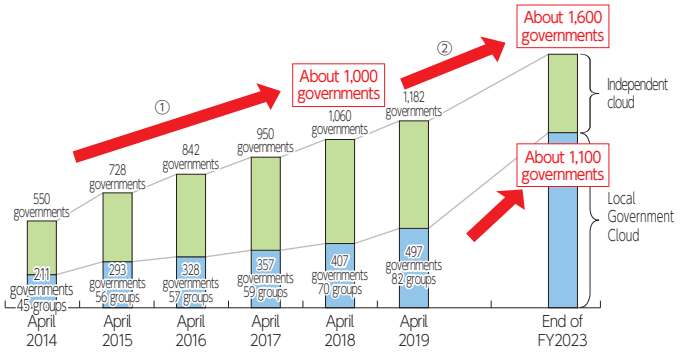
Figure 1-3-2-3 Changes in the Ratios of the Numbers of Basic Resident Registration Cards and Individual Number Cards to the Population



※at the end of March in each year

(Source) MIC (2021) "Research on Digital Government Promotion"

Figure 1-3-2-4 Changes in and the Goals of the Number of Municipalities Introducing the Cloud



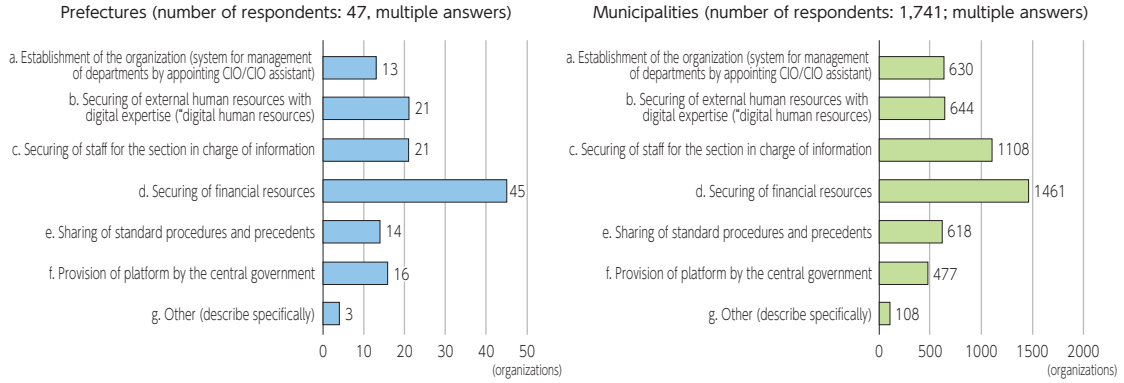
(Source) MIC Local Government Cloud Portal Site "Status of Cloud Introduction (as of April 2019)"

d. Organization, human resources and governance

Deputy governors and deputy mayors are often appointed as CIO from the perspective to clarify the head of the chain of command. Only a small percentage of local governments, 7 prefectures and 37 municipalities, appoint CIO or CIO aid from outside.

According to MIC "Questionnaire Survey regarding Securing of Digital Human Resources (2020)," many prefectures and municipalities point to "securing of financial resources" as a challenge for DX promotion, which is followed by "securing of staff for the section in charge of information" and "securing of digital human resources" (Figure 1-3-2-5).

Figure 1-3-2-5 Challenges for DX Promotion



(Source) MIC (2020) "Questionnaire Survey regarding Securing of Digital Human Resources"

e. Status of efforts regarding open data

(a) Status of the formation of the Plan for the Advancement of Public and Private Sector Data Utilization

Based on the Act on the Advancement of Public and Private Sector Data Utilization, central ministries/agencies and all prefectures are required to formulate their Plan for the Advancement of Public and Private Sector Data Utilization by FY 2020. According to a survey by the National Strategy Office of ICT, 22 prefectures and 90 municipalities had developed their plan as of July 2019 and March 2020 respectively.

(b) Status of open data promotion at local governments

Proportion of the local governments working on open data was about 65% as of April 2021. The proportion is 100% regarding prefectures, but municipalities are on the way.

f. citizens' view of utilization of e government

The need from citizens for online administrative procedures is high. On the other hand, online services have failed to spread for such reasons as the limited range of electronic applications for administrative procedures.

(2) Issues of the Past e-government/Local e-government Promotion

The following issues are pointed out regarding the past e-government/local e-government promotion.

a. Issues in user-centered service design

Regarding administrative procedures, it is pointed out that, due to the focus on going online itself, existing paper-based administrative procedures were just automatically replaced with online procedures without sufficient efforts for improving convenience. It is necessary to construct the entire services on the premise of digitalization, which includes abolition of institutions and customs interfering with digitalization, and to link services not only of the national government, but local governments and the private sectors to function as a series of services.

b. Issues in inter-organizational coordination of data and services

Currently, data held in public administration are mostly collected and managed separately by different departments and information systems, which interfere with the realization of the once-only principle (no need for resubmitting the same information). In the past digitalization of local governments, various supports were provided that were accompanied by guidelines by MIC and others, but efforts varied depending on the local government. In the future, the Digital Agency will lead the development of data infrastructure including base registries. The policy of standardization and commonalization is presented for core systems of the local governments, which is expected to lead to administrative services provided with adequate cooperation of the central and local governments.

c. Issues for project management and improvement cycle

In order to adapt to circumstances today when changes in the social environment and technology development are dizzying and difficult to predict, it is necessary to assess the organizations, business processes and information systems appropriately and make judgments concerning whether to continue, improve or discontinue them. For promotion of user-centered service reform in the future, it will be increasingly important to strengthen project management ability and fully implement improvement cycles.

3. Efforts Necessary for Construction of Digital Government in the Future

The Cabinet Secretariat and the MIC compiled the "Grand Design for Realization of Digital Government" ("the Grand Design") in March 2020. Based on the results of experts' interviews, this part summarizes the direction of the central and local governments' governance where the Digital Agency will play a key role and the challenges toward the construction of digital governments in line with the four pillars presented by the Grand Design above.

(1) Establishment of the Digital Agency and the Direction of Governance Enhancement

The Digital Agency to be established in September 2021 will work as the headquarters to strengthen cooperation of the central and local governments under a standardized system. In order to promote the cooperation smoothly and effectively, the central and local governments are required to clarify who has decision making authority.

(2) Need for Efforts to Prevent Widening of Regional Differences

While the strengthening of governance is expected to promote digitalization on the standardized bases, there is also a concern of widening of differences among local governments.

(3) Efforts Necessary for Realization of Digital Government that "Leaves No One Behind"

a. Focus on user experience

For "focus on user experience" at the central and local governments, it is absolutely necessary to uncompromisingly pursue user convenience after overviewing the administrative affairs from a higher perspective.

b. Data first

Toward creation of an environment for data utilization, the government agencies and local governments need to promote their data management.

c. Use of cloud computing systems and commonalization of components for the government information systems

The revised Digital Government Action Plan provides the development of "Government Cloud" to provide common bases and functions for the government information systems, and the promotion of standardization and use of cloud computing system for key backbone systems of local governments.

d. Smart government

(a) Review of the procurement method for the government information systems

For service reform based on users' perspective and prompt and flexible response to changes in the external environment and needs, it is necessary to establish a new cooperation scheme where governments and businesses work as a team to achieve results.

(b) Acceleration of digitalization through introduction of new development methods and tools

In response to the COVID-19 pandemic, new development methods, utilization of open data and other initiatives have been made. In order to improve and establish these initiatives, it is necessary to improve the project management ability of administrative officers and to establish a cycle for continued improvement after service launch and a mechanism to access the effects for this purpose.

(c) Development of cross-sectoral digital human resources and development of the government's implementation system

"Basic Policy for Reforms toward the Realization of a Digital Society" presented "securing of digital human resources" as one of the functions of the Digital Agency and indicated development of an environment for talented personnel to build their career while changing their jobs in different sectors (private, local and central governments) and fostering of an organizational culture where government and private digital human resources can effectively cooperate to carry out tasks.

(d) Working-style reform

The Grand Design indicates that it is necessary to speed up internal administrative affairs, examination, etc. by actively introducing telework and digitalization to affairs and activities in the government.

(e) Response to emerging technologies

The Grand Design indicates the need for proactive participation in discussions on appropriate introduction of advanced technologies and services to administrative services.