Key Points of the 2021 White Paper on Information and Communications in Japan

Key Points

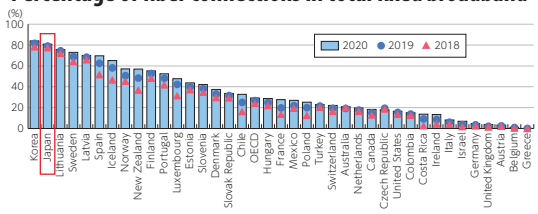
Part 1 Special Theme: Livelihood and Economy Supported by Digital Technologies

Introduction History of Digitalization in Japan

- Since the Basic Act on the Formation of an Advanced Information and Telecommunications Network Society was established in 2000, Japan has tackled digitalization under various national strategies, including the e-Japan Strategy, and has made great progress in developing fiber-optic and other broadband networks.
- However, information and communication technology (ICT) utilization has not necessarily made sufficient progress.
- International digital competitiveness and e-government indicators show low ratings for Japan's human resources and data analysis. Japan's rankings have stagnated.

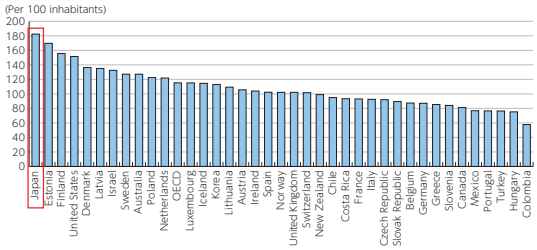
Broadband network development by country

Percentage of fiber connections in total fixed broadband



(Source) OECD Broadband statistics

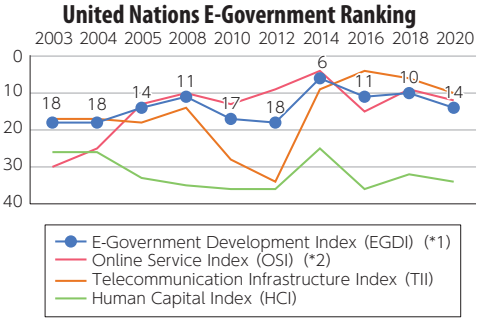
Mobile broadband diffusion rates



* As of June 2019
(Source) OECD Broadband statistics

Japan's ranking in international indicators

United Nations E-Government Ranking



(* 1) "E-Government Index" for 2001 and "E-government Readiness Index" for 2003-2008
(* 2) "Web Measure Index" in and before 2008
(Source) Prepared by NTT Data Institute of Management Consulting from UN e-Government Surveys

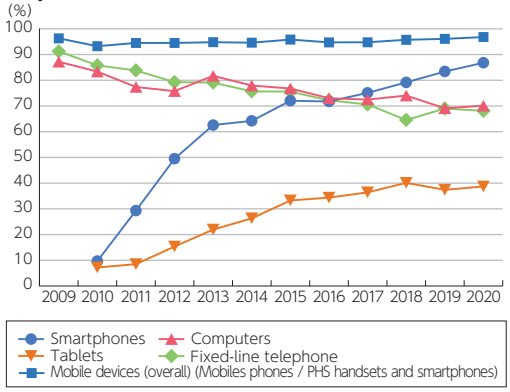
Chapter 1 Present Status and Challenges for Digitalization

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

- As smartphones have rapidly become widely used, internet use through mobile terminals has expanded.
- The internet is used mainly for shopping, payments, video distribution and other living or entertainment purposes. Public services through the internet are less used.

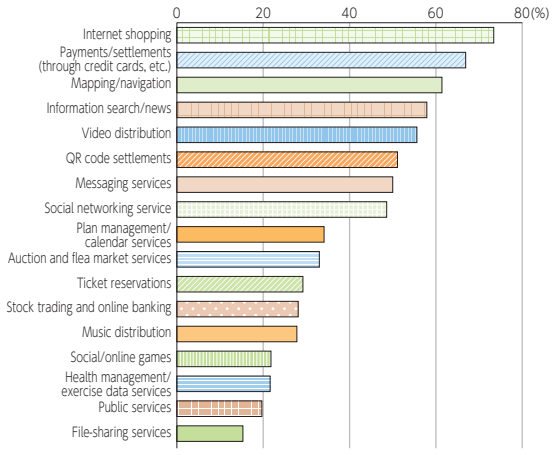
Household ownership rates for ICT devices

Mobile devices (overall) (Mobiles phones / PHS handsets and smartphones)



(Source) Ministry of Internal Affairs and Communications "Communications Usage Trend Survey"

Internet services for daily use

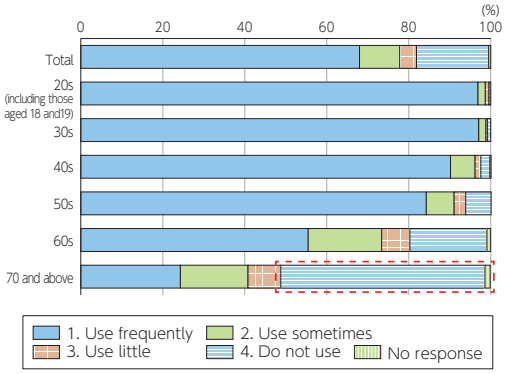


(Source) Survey by the Ministry of Internal Affairs and Communications

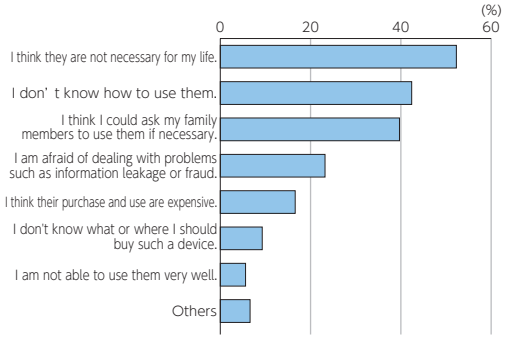
(1) Present Status and Challenges for Digital Utilization in Citizens' Lives ②

- There is a generation gap that can be seen in the use of ICT devices. Particularly, those aged 70 and above use such devices much less than others.

Smartphone or tablet use



Reasons for not using smartphones or tablets

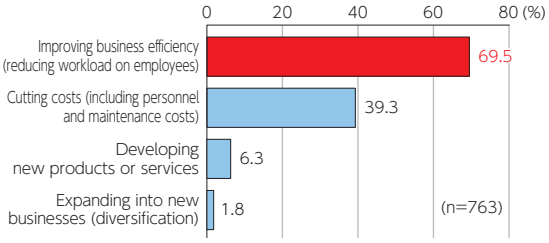


(Source) Prepared by the Ministry of Internal Affairs and Communications from Cabinet Office (2020) "Opinion Poll on ICT Device Use"

(2) Present Status and Challenges for Digital Transformation in Corporate Activities

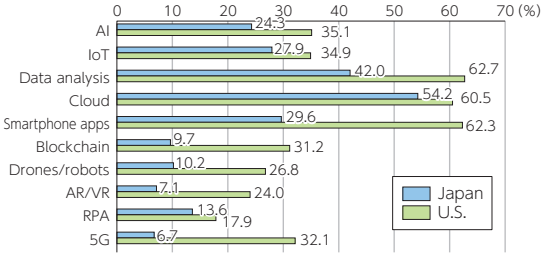
- ICT investment by Japanese companies is mainly designed to improve business efficiencies over that of promoting digital transformation accompanied by business model reforms such as business expansion and new business exploration.
- As Japanese ICT human resources become concentrated in ICT companies, other companies lack human resources for digital transformation, which becomes a major issue.

Purposes for using cutting-edge technologies



(Source) Ministry of Finance (2018) "Use of Cutting-edge Technologies (e.g., IoT, AI) Indicated by Survey by Regional Financial Bureaus"

Digital technology introduction status



(Source) Survey by MIC

Sales growth through digital transformation

Estimated changes for a case in which Japanese companies tackle digital transformation as proactively as U.S. companies

Manufacturers: +5.7% (about 23 trillion yen)

Nonmanufacturers: +4.2% (about 45 trillion yen)

* Estimates based on questionnaire surveys of companies. Percentage shares for companies tackling digital transformation found in the surveys:
[Manufacturers] Japan: 13.3% U.S.: 63.6%
[Nonmanufacturers] Japan: 13.4% U.S.: 55.9%

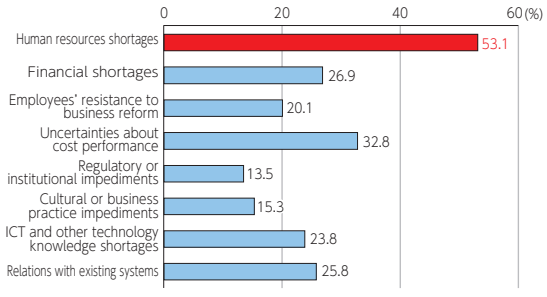
(Source) Survey by MIC

ICT human resources shortages

ICT human resources totaled **about 220,000** persons in 2018 and are expected to increase to **about 450,000 persons in 2030** (median scenario).

(Source) Ministry of Economy, Trade and Industry (2019) "Survey on ICT Human Resources Supply and Demand"

Problems with promoting digital transformation (Japanese companies)



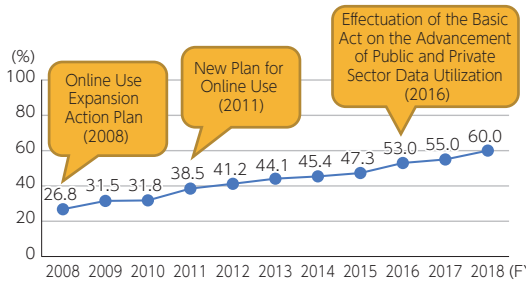
(Source) Survey by MIC

Key Points

(3) Present status and challenges for digitalization in public sector

- Along with the spread of the COVID-19 pandemic, the need from citizens for online administrative procedures has grown.
- On the other hand, online services have failed to spread for such reasons as the limited range of electronic applications for administrative procedures, the absence of knowledge about electronic applications and the complexity of electronic applications.

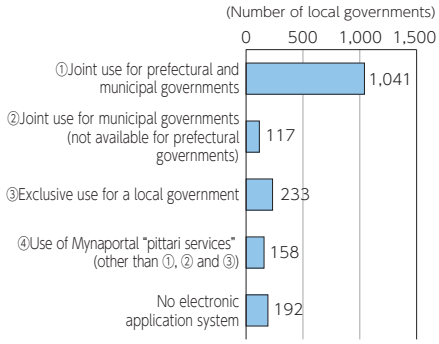
Online service use rate trend for national government procedures



* Online service use rate: Online procedures' share of procedures available for online application

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

Status of electronic application system development at local governments



* As of April 1, 2020

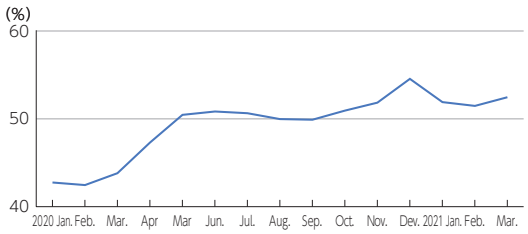
(Source) Ministry of Internal Affairs and Communication (2021) "Research on Digital Government Promotion"

Chapter 2 Digitalization Accelerated by the COVID-19 Pandemic

(1) Digital Utilization Expansion under COVID-19

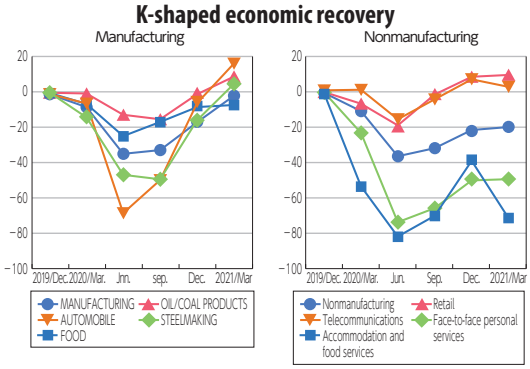
- As the COVID-19 pandemic has spread, internet shopping and video distribution services have grown.
- An increase in time spent at home has led internet traffic to grow by more than 150% year on year.
- Consumer behavior changes will lead to economic trend changes. Earnings will remain stagnant in face-to-face service industries.

Household share for internet shopping



(Source) Prepared from Ministry of Internal Affairs and Communications "Survey for Household Economy"

K-shaped economic recovery

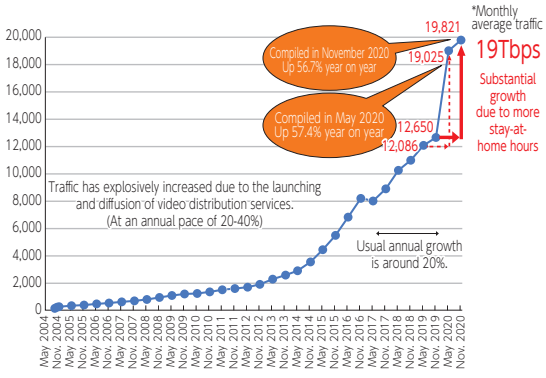


(Changes in percentage points from the December 2019 survey)

(Source) Prepared by Ministry of Internal Affairs and Communications from Bank of Japan Tankan Survey (Business condition diffusion index by industry)

Internet traffic growth

Fixed broadband service

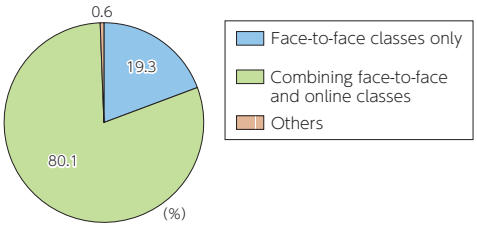


(Source) Ministry of Internal Affairs and Communications (February 5, 2021) "Japan's Internet Traffic Compilation/Estimation"

(2) Public Sector's Digital Utilization under the COVID-19 Pandemic

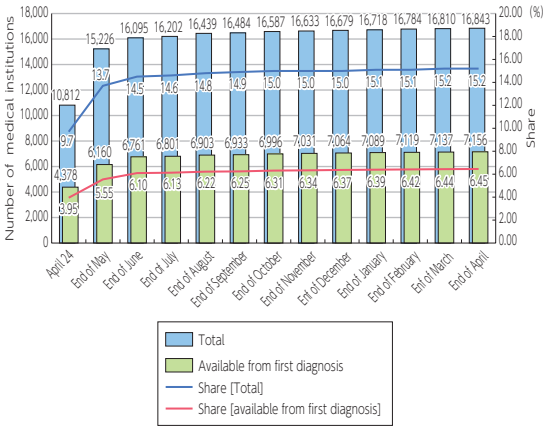
- Under the COVID-19 pandemic, Japan has used digital technologies to promptly provide economic assistance to citizens and detect regional COVID-19 infections and risks and to discover various relevant problems.
- In the education and medical sectors, remote education and online diagnosis have been implemented to help prevent COVID-19 infections.

Class implementation policies at universities



(Source) Prepared by the Ministry of Internal Affairs and Communications from the Ministry of Education, Culture, Sports, Science and Technology (2020) "Survey on Second-half semester Class Implementation Policies at Universities, etc."

Number of institutions registered for telephone/online diagnosis

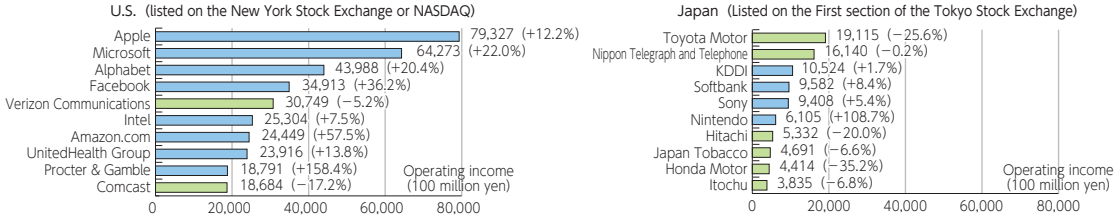


(Source) Ministry of Health, Labor and Welfare (2021) document for "the 15th meeting of the council on revisions to guidelines regarding adequate online diagnosis implementation"

(3) Corporate Activity Changes under the COVID-19 Pandemic

- In the United States, where corporate earnings are recovering from COVID-19 losses, technology companies are driving economic growth on the strength of digital transformation.
- The telework implementation rate rises under a state of emergency declaration and declines after its lifting. Telework and other digital technology initiatives should be established to secure resilience to infectious diseases and natural disasters.

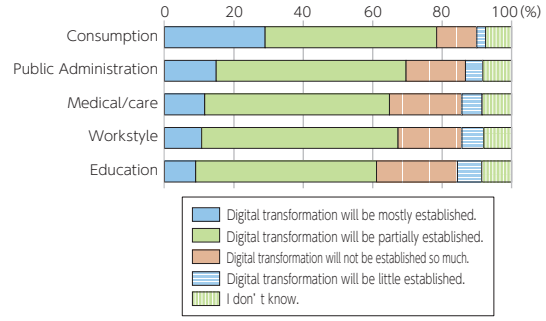
Top 10 U.S. and Japanese operating income earners among listed companies in 2020



* Prepared from data available on February 10, 2021. U.S. companies' operating income is converted into yen at the rate of 106.8 yen to the dollar. In parentheses are percentage changes from the previous year.

(Source) Document for the Growth Strategy Council

Will digital transformation be established? (by sector)

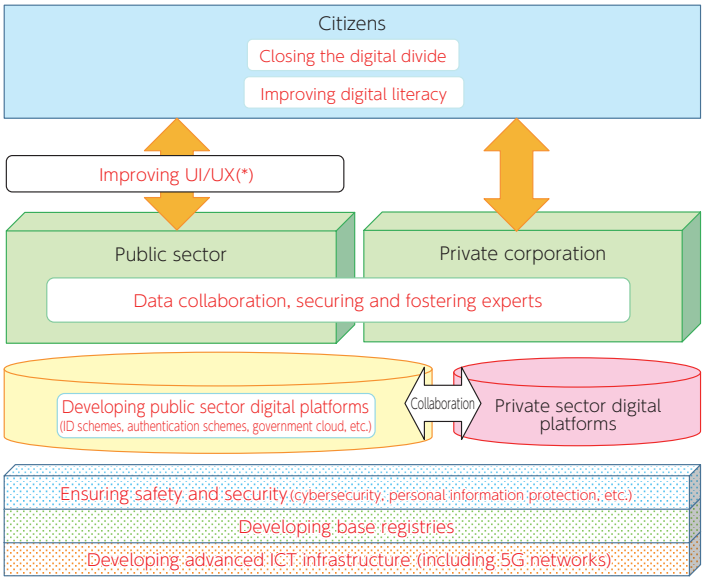


(Source) Survey by MIC

Key Points

Chapter 3 Toward Realizing Digital Transformation that "Leaves No One Behind"

- In response to the COVID-19 pandemic, digital transformation should be promoted not only to improve productivity and create new added value, but also to secure resilience to infectious diseases and natural disasters and realize a sustainable society.
- In the future, Japan should strategically and integrally promote digital utilization among citizens and digital transformation in private corporations and the public sector. In this respect, it is important to build digital society common infrastructure by developing 5G and other ICT infrastructure, base registries and public digital platforms (ID, authentication, cloud and other platforms), and ensuring safety and security including cybersecurity and personal information protection.



* UI stands for user interface and UX for user experience

* Words written in red are future policy challenges.

Part 2 Basic Data and Policy Directions

Chapter 4 Basic Data on the ICT Field

- Domestic production values of ICT industry (Year 2019, nominal) — **108.4 trillion yen** 10.4% of all industries
- Number of employment in ICT industry (Year 2019) — **4.058 million** 5.6% of all industries
- Added value induced by the ICT industry (Year 2019) — **92.1 trillion yen**
- ICT investment in Japan (Year 2019, real (Year 2015 values)) — **14.3 trillion yen** 15.7% of all corporate capital investment
- Trade value of ICT goods and services (Year 2019, nominal) — **Import** 17.0 trillion yen **Export** 10.2 trillion yen
- Research spending on ICT industry (FY 2019) — **3.9 trillion yen** 27.1% of all corporate research spending
- Researchers on ICT industry (FY 2019) — **174 thousand** 34.3% of all corporate researchers
- Labor productivity in communications industry (FY 2019) — **14.131 million yen**
- Size of Japanese content market (Year 2019) — **12.0 trillion yen**
- Export value of Japanese broadcast content (FY 2019) — **52.95 billion yen**
- Fixed-line telephones ownership rate (households) (Year 2020) — **68.1%**
- Smartphones ownership rate (individuals) (Year 2020) — **69.3%**
- Internet usage rate (individuals) (Year 2020) — **83.4%**
- SNS usage rate (individuals) (Year 2020) — **73.8%**
- State of cloud service usage (Used at least by some offices or divisions, Year 2020) — **68.7%**
- State of Introduction of IoT/AI (Introduction rate, Year 2020) — **12.4%**
- Fixed-line broadband services subscriptions (End of FY 2020) — **42.68 million**
- Mobile communication services subscriptions (End of FY 2020) — **195.12 million**
- Internet traffic in Japan (Nov. 2020, Download) — **19.9 Tbps**
- Subscribers to broadcasting services (End of FY 2019) — **81.128 million**
- Time spent watching TV (real-time) (Jan. 12 - 18, 2021, weekday, per day) — **163 minutes**
- Time spent using the Internet (Jan. 12 - 18, 2021, weekday, per day) — **168 minutes**

Chapter 5 ICT Policy Directions

☐ Promoting Comprehensive Strategy

In December 2020, the cabinet decided the "Basic Policy for Reforms toward the Realization of a Digital Society." In May 2021 six bills related to digital reform were passed and enacted by the Diet and promulgated. In June 2021, the cabinet decided the "Priority Policy Program toward the Realization of a Digital Society."

☐ Developments in Telecommunications Policy

MIC develops an environment for fair competition in the telecommunication field; promoting broadband infrastructure development; ensuring of safety and reliability of telecommunication infrastructure; developing an environment for safe and secure use of telecommunication services, etc.

☐ Developments in Radio Policy

MIC has been holding the "Round-table Conference on Radio Policy in the Age of Digital Transformation" since November 2020 for study on promotion of effective use of radio waves in a digital age; MIC makes an effort toward sophistication and diversification of radio wave use; sophistication of mobile communication systems; regional deployment of ICT infrastructure; and develops environments for radio wave usage, etc.

☐ Developments in Broadcasting Policy

MIC set up subcommittee to study Ideal state of public broadcasting; strengthening of the broadcast business foundation. MIC takes measures for promotion of broadcast content distribution; enhancement of network resilience/disaster resistance, etc.

☐ Promoting Cybersecurity Measure

MIC conducts examinations of action plans for cybersecurity and develops cybersecurity policy; strengthening of cyber security measures through initiatives regarding IoT and initiatives for human resource development, etc.

☐ Promoting IoT/ICT Use and Application

MIC takes measures for solving issues through use of cutting-edge technologies through promotion of local 5G, promotion of telework; developing an environment where anyone can enjoy convenience through ICT, through promotion of support for ICT use; promoting data distribution through initiatives on the personal data trust bank, etc.

☐ Promoting ICT Research and Development

In August 2020, Information and Communications Council compiled the 4th interim report, "New ICT Strategy in the Beyond 5G Era" in order to promote ICT strategies toward realization and global expansion of Society5.0. MIC strengthen R&D toward realization of cutting-edge ICT in the entire society; support for innovation creation using competitive development funds and promote social implementation of R&D results, etc.

☐ Promoting International Strategies for ICT

MIC has been working for overseas deployment of ICT infrastructure systems, and has taken approaches of various forms of contributions and cooperation at multinational and bilateral venues.

☐ Promoting Public Administration and Disaster Prevention through ICT

MIC promotes digitalization of local governments and informatization in the field of disaster prevention

☐ Developments in Postal Service Administration

MIC promotes postal administration, postal administration in the international field and correspondence delivery services