Outline of the 2025 White Paper on Information and Communications in Japan

July 2025

Ministry of Internal Affairs and Communications (MIC), Japan

Outline of the 2025 White Paper on Information and Communications in Japan

Part 1: Special Feature: Digital Technologies as Spreading Social Infrastructure

- The special feature overviews the trend of the expansion of digital ecosystems (SNS, cloud, etc.) that are performing social infrastructure functions, the trend of explosive AI progress, foreign business operators' rise in the digital field, and the relevant situation in Japan in 2025, which marks the end of the first quarter of the 21st century. Based on the situation in the world today, the natural environment, social changes, etc., it also envisions the challenges brought about by the advancement of digital technologies and the roles of digital technologies in solving social issues.

- Chapter 1 Penetration, Expansion, and Trends of Digital Technologies as Social Infrastructure
- Chapter 2 Challenges Posed by Advancing Digital Technologies
- Chapter 3 Toward Solving Social Issues through Advancing Digital Technologies

Part 2: Current Status and Challenges for Information and Communications

- Part 2 overviews information and communication market trends and the current status of digital utilization, and it summarizes current information and communication policy initiatives.

Chapter 1 Trends in the ICT Market

- Chapter 1 reviews and analyzes the **current situation of the ICT industry in Japan and the rest of the world** (e.g., information and communication industry GDP) and **relevant markets** (e.g., telecommunications, broadcast content, and applications)
- It also reviews and analyzes the **current status of digital use** for national life, business activities, and public areas **in Japan and the rest of the world**.

Chapter 2 ICT Policy Initiatives in the MIC

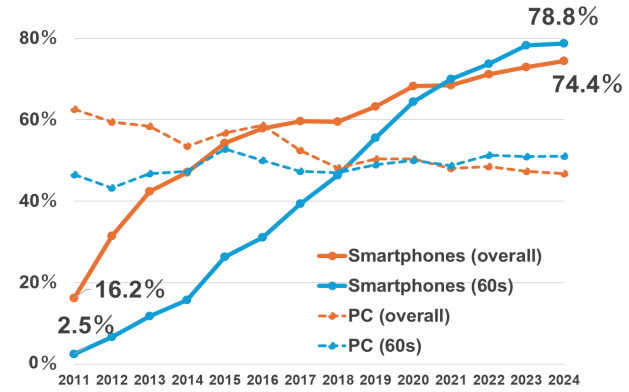
- Chapter 2 summarizes **ministry-wide ICT policy initiatives and the ministry's policies and their future directions in each of the ICT policy domains** (telecommunications, radio policy, broadcasting policy, etc.).

Data collection: Relevant data from Part 1 and 2 **are posted on the MIC website**

- **In social life and business activities, smartphones, SNS, cloud services, etc. are penetrating and expanding. Important and indispensable digital domains for people's lives and business activities are expanding.**
  - ➢ Internet connection terminals have shifted to smartphones even for elderly people. SNS use has expanded across all generations.
  - ➢ The usage rate of cloud services for companies has doubled in about 10 years. Cloud services have become an indispensable presence for business activities.

Internet connection terminals

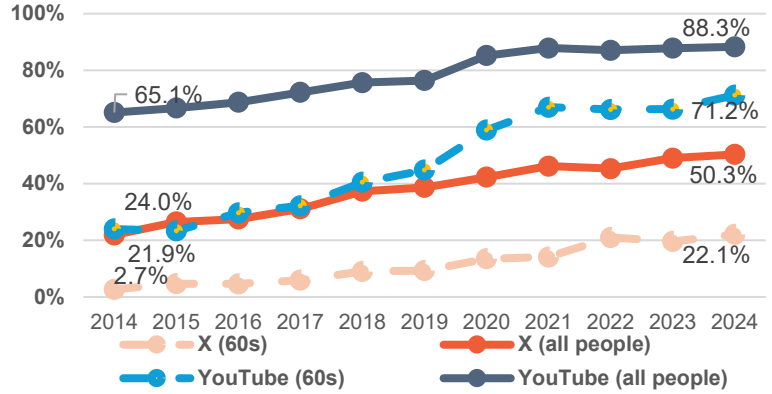
About 80% of people in their 60s use smartphones as internet connection terminals



Prepared from the MIC “Communication Usage Trend Survey”

Usage rates of YouTube and X

The usage rate of YouTube is about 90% for all people and about 70% for people in their 60s.
About half of all people use X.

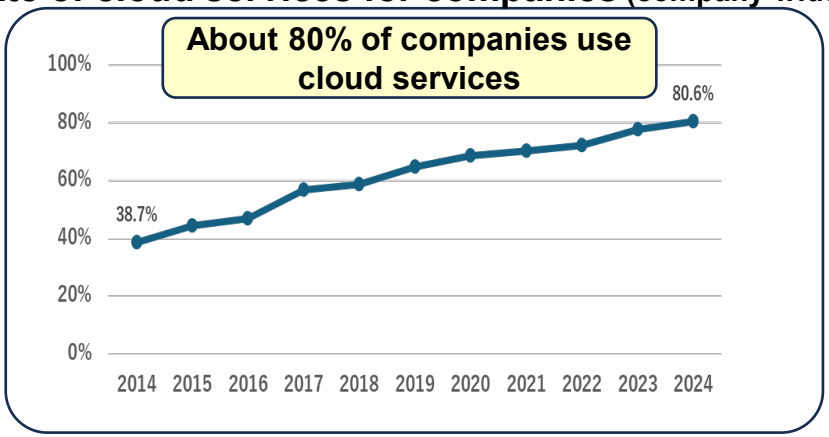


* The rates in 2024 are calculated for people aged 10–69.

Prepared from the MIC “Survey on Information and Communication Media Usage Time and Information Behavior”

Usage rate of cloud services for companies (company-wide + partial)

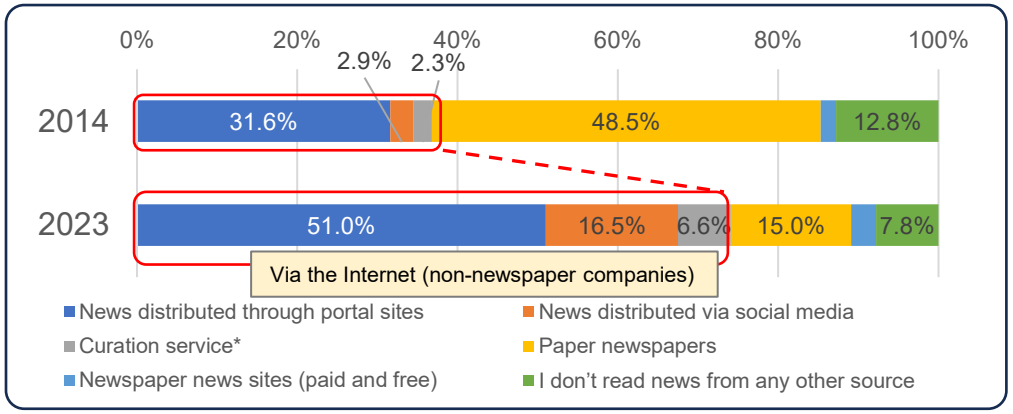
About 80% of companies use cloud services



Prepared from the MIC “Communication Usage Trend Survey”

- **The Internet has become an important source for people to get their news. Social media, such as YouTube, are also a source of news.**
  - The most frequently used text-based news service is via the Internet. The Internet has become the "most indispensable" source of information for people in their 50s and younger.
  - YouTube is used as a news source by about 30% of people in each generation.
  - The reliability of the Internet is lower than that of TV and newspapers among media sources for all generations.

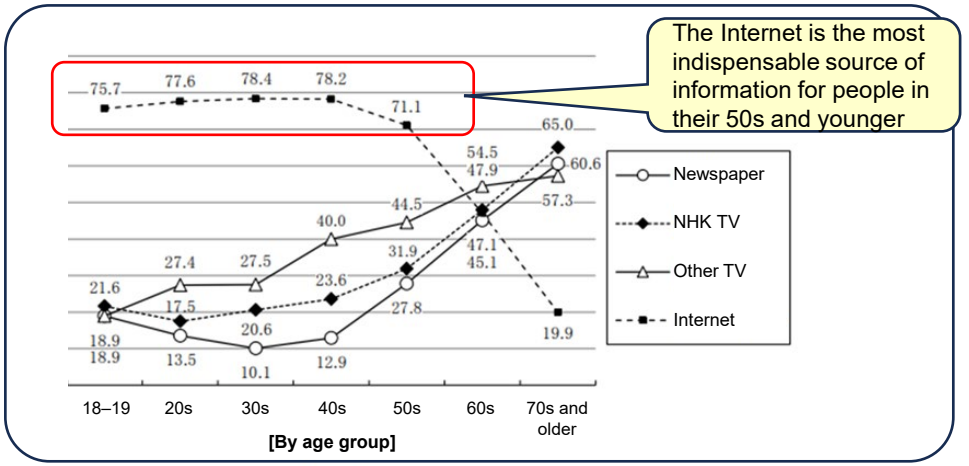
The trend of the most frequently used text-based news service



* News apps such as SmartNews, Gnosy, and NewsPicks

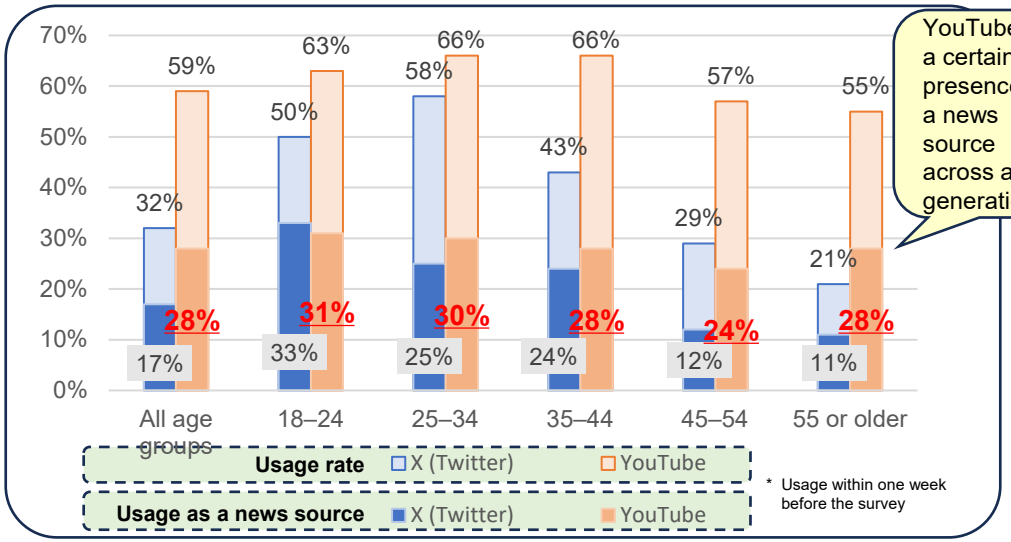
Prepared from the MIC "Survey on Information and Communication Media Usage Time and Information Behavior"

Percentage of people who say it is "indispensable" as a source of information (by age group, 2024)



(Source) Japan Press Research Institute "The 17th National Public Opinion Survey on Media" (2024)

Usage rate of social media as a news source (by age group, 2024)



Prepared from Reuters Institute for the Study of Journalism "Digital News Report" (2024)

Reliability of media (by age group, 2024)

The reliability of the Internet is lower than that of TV and newspapers for all generations.

		TV	Newspaper	Internet	Magazine
All generations	All generations (N=1,800)	58.2%	59.9%	27.0%	15.7%
Age group	10s (N=140)	52.1%	57.9%	24.3%	18.6%
	20s (N=218)	46.8%	50.0%	28.0%	17.4%
	30s (N=237)	43.5%	43.0%	29.1%	17.3%
	40s (N=306)	54.6%	54.9%	31.7%	19.0%
	50s (N=330)	63.0%	66.4%	33.0%	15.2%
	60s (N=271)	66.4%	69.4%	22.5%	13.3%
	70s (N=298)	72.1%	71.1%	18.5%	11.4%

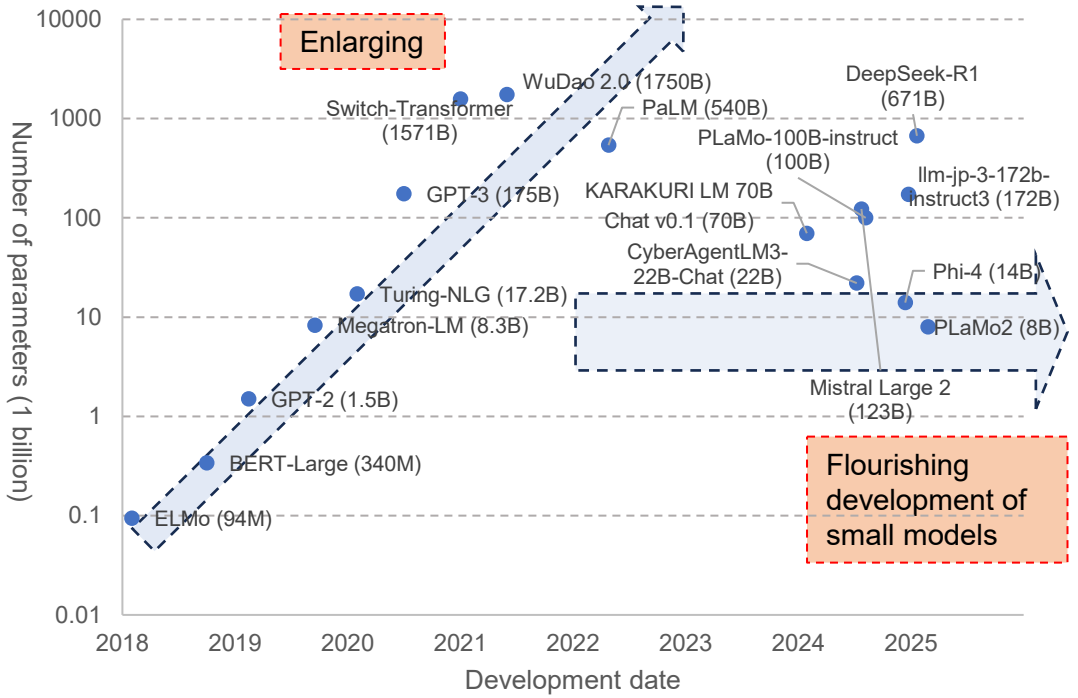
MIC Survey on Information and Communication Media Usage Time and Information Behavior

● AI has made explosive progress amid intensifying global development and competition. New technological trends have been observed.

- ➢ The development of large language models (LLMs) has been driven by foreign big tech companies capable of huge investments and foreign startups.
- ➢ New technologies to improve the performance of AI are advancing, further intensifying technological development and competition.
  (Models that excel at reasoning [e.g., OpenAI o1], the emergence of a Chinese startup's open model [DeepSeek-R1], and the development of high-performance small models, etc.)
- ➢ So-called "AI agents" and developments in robotics that apply AI are also accelerating worldwide.

Changes in the number of LLM parameters

While larger LLMs are being developed, the development of small-scale models emphasizing efficiency is flourishing.



*Note that the number of parameters is not disclosed for many of the recent cutting-edge large models.

(Source) Prepared from the University of Tokyo Matsuo Laboratory "AI Evolution and Japan's Strategy" (2023) and presentations by development organizations

Recent LLM-related technology trends

Emergence of reasoning models

- In September 2024, OpenAI announced the development of OpenAI o1, which is strong in fields such as mathematics.
- Reports say that the OpenAI o1 achieved a higher score than the minimum passing score for the 2025 University of Tokyo entrance examination.

Chinese startup's DeepSeek-R1

- In January 2025, Chinese AI startup DeepSeek announced the development of DeepSeek-R1.
- The impact of the announcement included a fall in the stock prices of semiconductor companies and other companies.

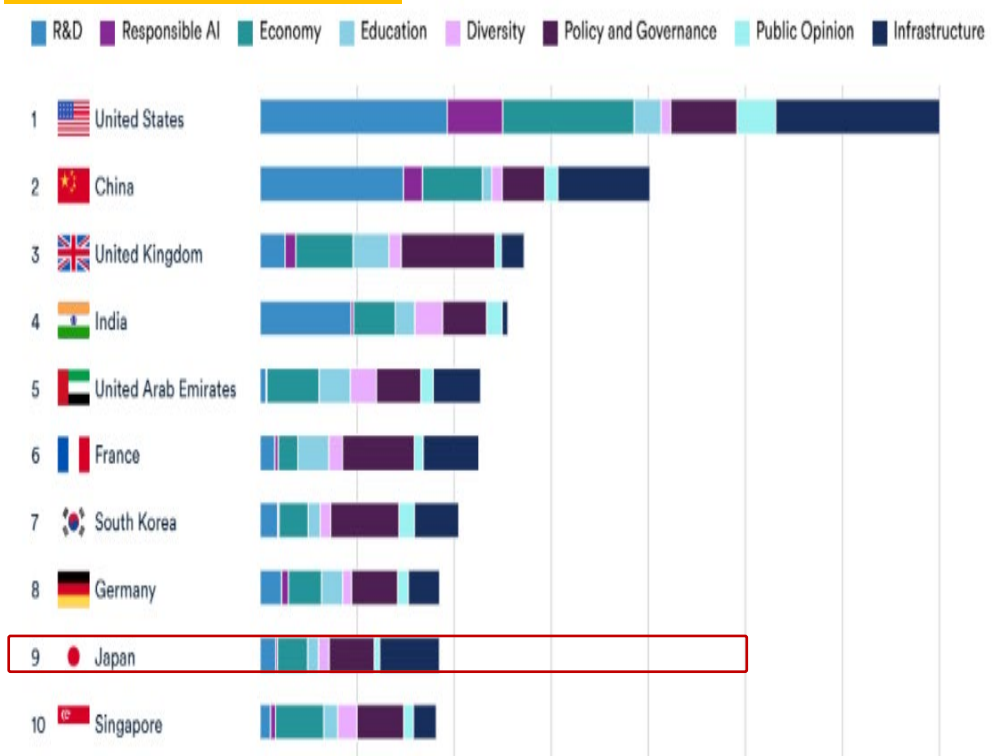
Development of relatively small language models

- From the perspective of the advantage of using them in local environments where confidentiality is required or for specific purposes, the positive development of small models is progressing.
- The Phi-4 (14 billion parameters) announced by Microsoft in December 2024 performs complex reasoning.

- **Compared to countries that lead the world** in AI research and development capabilities and utilization, **Japan is rated lower**.
- On the other hand, **the development of LLMs in Japan has become active**. **Improvements in the performance of small models through technological advancements and government support measures are supporting AI development**.

"AI Vibrancy Ranking" (2023)

[Weighted Index Score]



(Source) Prepared from Stanford University Human-Centered Artificial Intelligence "Global AI Vibrancy Tool"

Examples of LLM development by Japanese organizations

National Institute of Advanced Industrial Science and Technology, Institute of Science Tokyo[*1] /Llama 3.1 Swallow (about 8 billion, about 70 billion)	A model that strengthens Japanese language ability based on the English proficiency of Meta's LLM (Llama 3.1)
Fujitsu, Cohere[*2] /Takane (unknown number of parameters)	This LLM achieved the world's highest record in terms of the Japanese language performance evaluation index (at that time)
CyberAgent /CyberAgent LM3-22B-Chat (about 22.5 billion)	The model was developed without being based on any existing model. Its Japanese proficiency is at the same level as Meta's model (Meta-Llama-3-70B-Instruct).
Preferred Networks Group[*3] /PLaMo-100B (about 100 billion)	It was developed independently with proprietary architecture and training data. It surpasses OpenAI's GPT-4o and others in Japanese language performance. * Later, PLaMo2 1B and PLaMo2 8B were developed with the number of parameters reduced.

(Sources) Prepared from the press releases of development organizations
Model descriptions are those at the time the press releases were published.

*1 A research team led by Professors Okazaki Naoaki and Yokota Rio
*2 Developed in collaboration with Canadian AI startup Cohere
*3 Developed by Preferred Elements, a 100%-owned subsidiary of Preferred Networks

(Part 1: Special Feature) Explosive AI Progress Trends (Current Status of AI Use)

- **The percentage of individuals who have experience using generative AI and companies that have formulated a policy of using generative AI increased from the FY2023 survey. However, it remained lower than other countries covered by the FY2024 survey.**

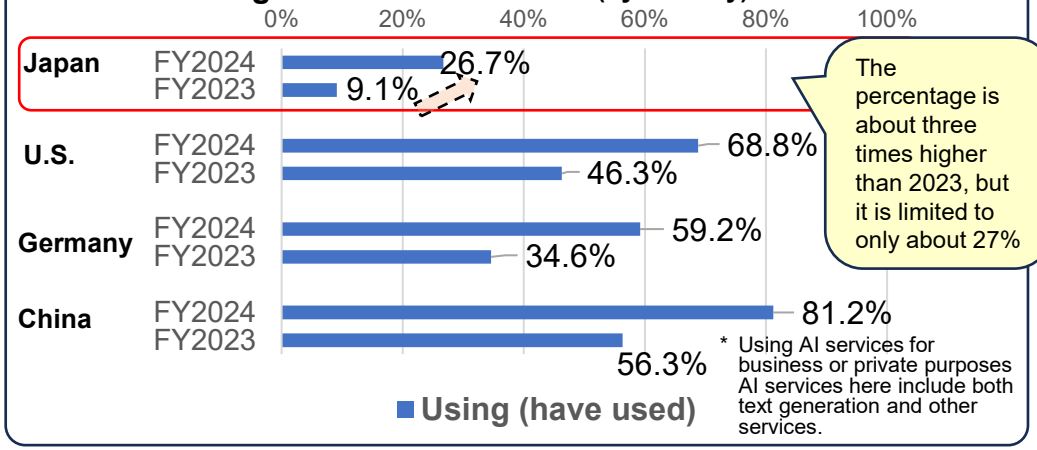
[Individuals]

- The percentage of individuals who have experience using generative AI (the FY2024 survey) tripled from the FY2023 survey to about 27%. However, it was lower than other countries covered by the FY2024 survey.
- About 45% of individuals in their 20s have used generative AI.

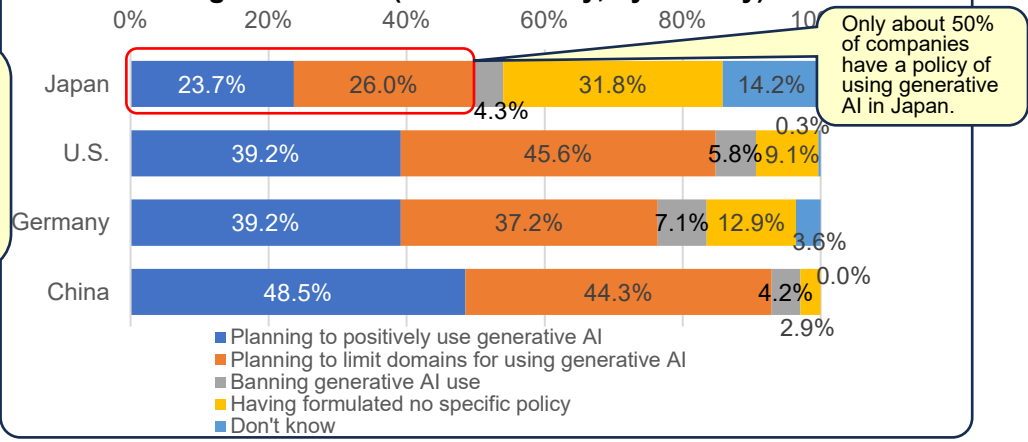
[Companies]

- The percentage of companies that have formulated a policy of using generative AI services (FY2024 survey) was about 50%, increasing from about 43% in the FY2023 survey. It is lower than other countries covered by the FY2024 survey.
- The percentage of companies that have formulated a policy of using generative AI in Japan was about 56% among large companies and about 34% among small- and medium-sized ones.

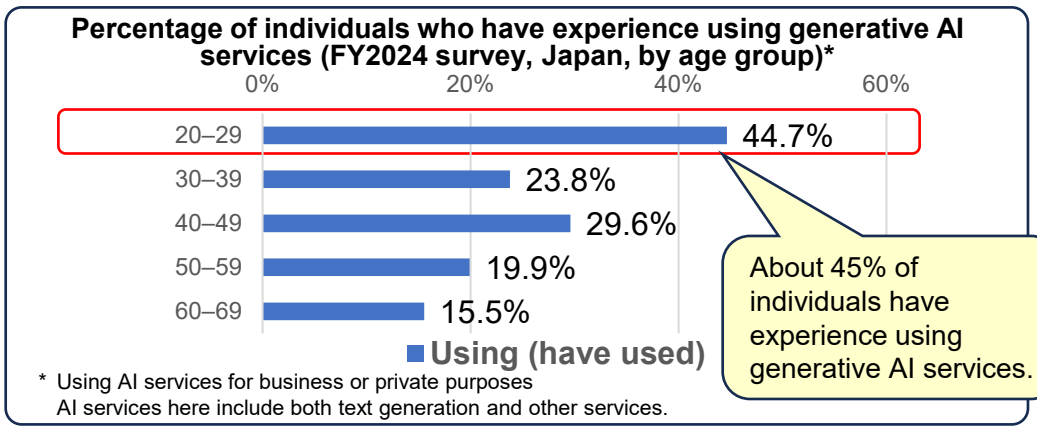
Percentage of individuals who have experience using generative AI services (by country)*



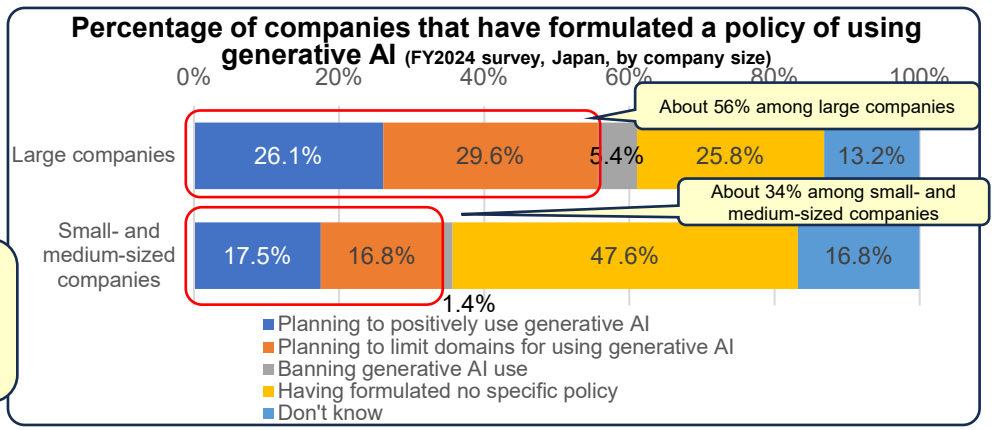
Percentage of companies that have formulated a policy of using generative AI (FY2024 survey, by country)



Percentage of individuals who have experience using generative AI services (FY2024 survey, Japan, by age group)*



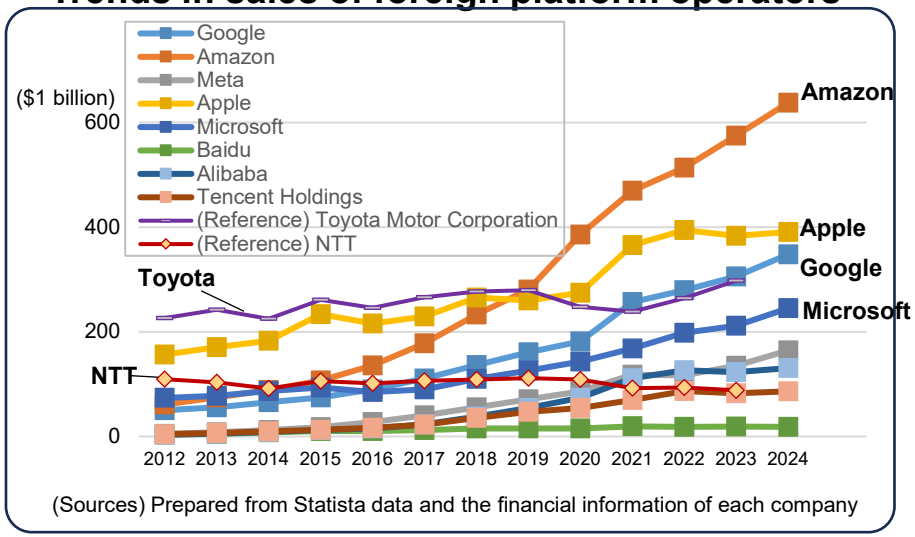
Percentage of companies that have formulated a policy of using generative AI (FY2024 survey, Japan, by company size)



(Source) MIC (2025) "Survey on the latest trends in ICT, R&D, and digital utilization in Japan and other countries"

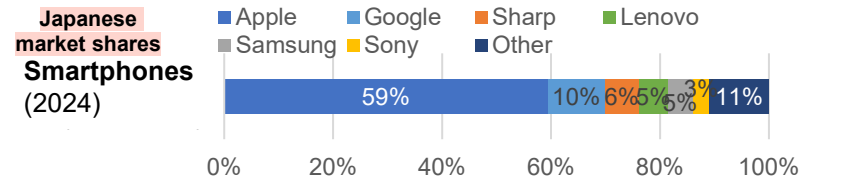
- **Foreign platform operators** have grown significantly by utilizing the data they collect. **They have a great presence in Japan as well**. Recently, their influence has expanded to infrastructure such as submarine cables and power plants.
- **Japanese companies' market share in the digital field is generally low. Japan's digital trade deficit is expanding. Foreign business operators have a great presence.**

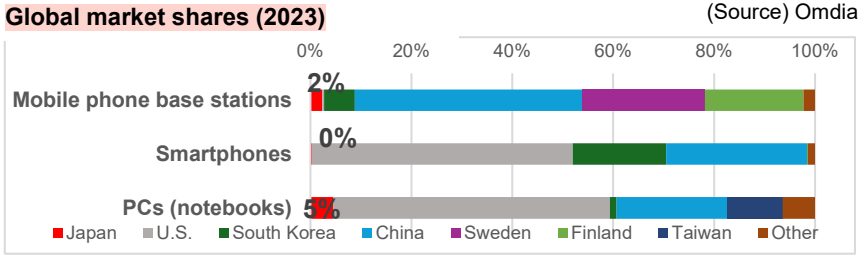
Trends in sales of foreign platform operators



(Sources) Prepared from Statista data and the financial information of each company

Digital market shares (estimated)

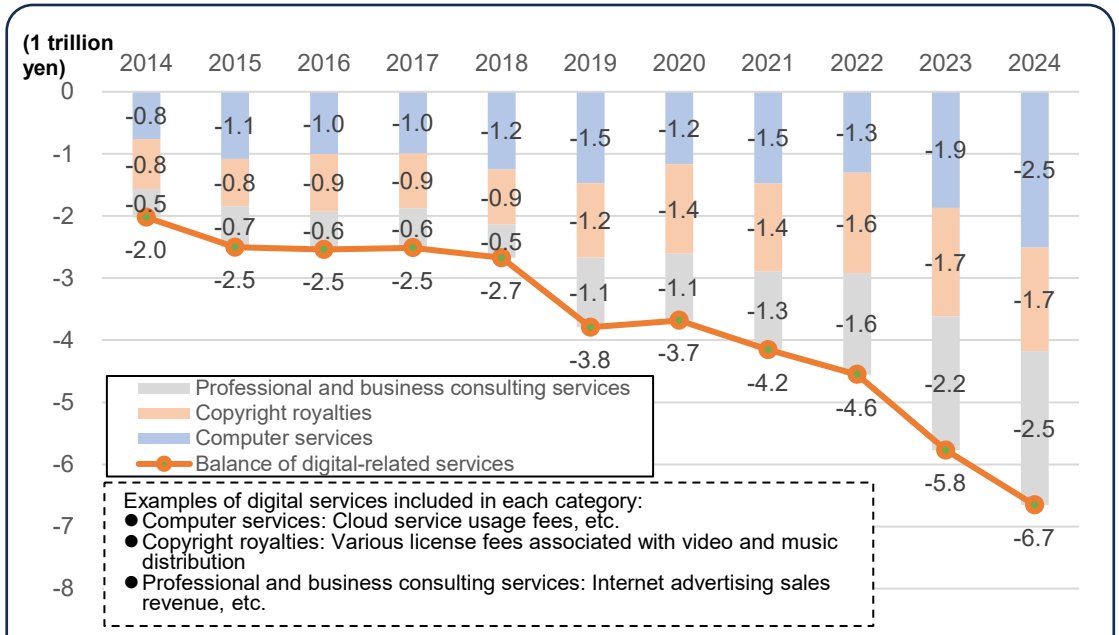




(Source) Prepared from the MIC "International IoT Competitive Index"

*It is estimated from major business operators' shares. Due to rounding and the possibility that there may be companies that are not covered by this estimate, "0%" does not necessarily mean that there is no market share for the relevant country or region. It may mean a very small share in some cases.

Trends in the balance of digital-related services



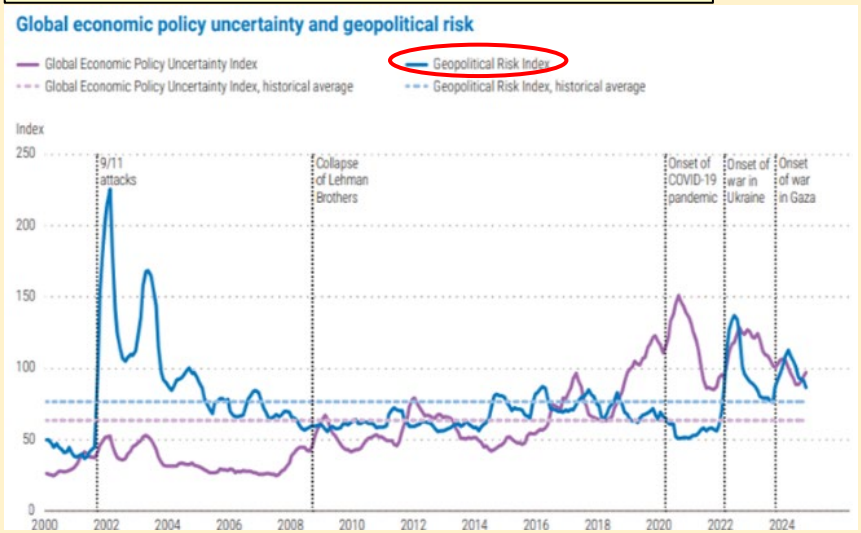
Examples of digital services included in each category:
- Computer services: Cloud service usage fees, etc.
- Copyright royalties: Various license fees associated with video and music distribution
- Professional and business consulting services: Internet advertising sales revenue, etc.

Source: Prepared from "Balance of Payments Statistics" by the Ministry of Finance

- **As digital technologies are increasingly used** for social and economic activities **and their presence in the social infrastructure grows, their negative impact may become even greater. Risks involving digital technologies,** including AI, **may also increase**.
- **Amid increasing uncertainty in the world situation, the intensification of disasters through changes in the natural environment, and the declining birthrate and aging population in Japan, it is important to** promote further technology development and utilization and **respond to feared threats due to the advancement of digital technologies** and their use so that people can fully benefit from advancing digital technologies.

Growing global geopolitical risks

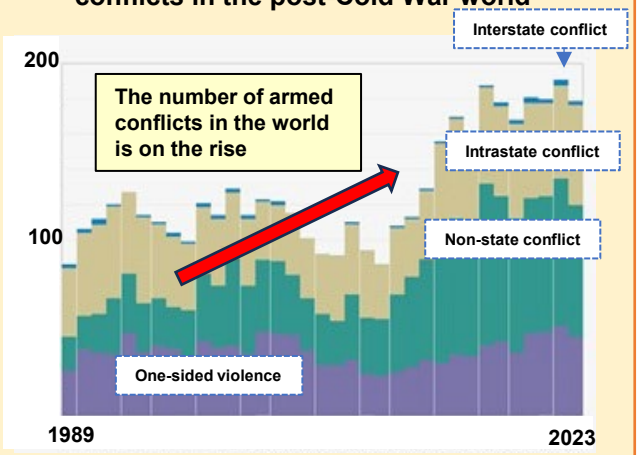
Geopolitical risk indicators have been on the rise since the outbreak of the Ukraine war



*Based on the number of newspaper articles on geopolitical tensions, etc.

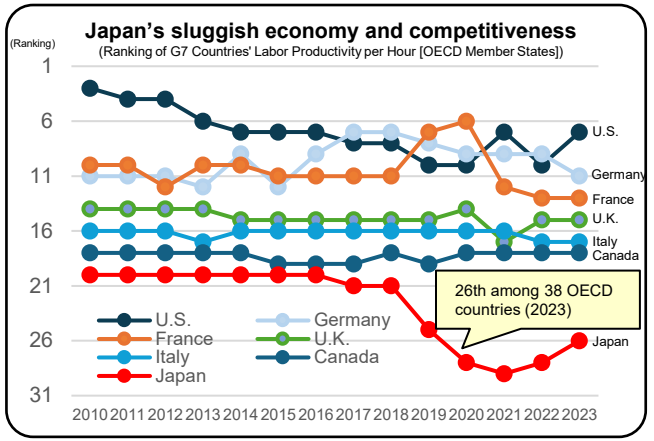
(Source) United Nations “World Economic Situation and Prospects 2025”

Secular changes in the number of armed conflicts in the post-Cold War world



(Source) World Economic Forum “Global Risks Report 2025”

Japan’s sluggish economy and competitiveness



(Source) Prepared from OECD Data Explorer

(Part 1 Special Feature) Challenges Brought about by Advancing Digital Technologies

- As digital technologies are increasingly used for social and economic activities and their presence in the social infrastructure grows, their negative impact may become even greater.
- **This part provides an overview of the major challenges in the digital field brought about by the advancement of digital technologies and the expansion of their influence as social infrastructure.**

(1) Securing a reliable digital infrastructure that supports a digital society

■ **As digital technologies such as AI are used to solve social issues in Japan, there is a growing need to develop digital infrastructure to support a digital society in response to increasing demand for communications, computing resources, electricity, etc., as well as disaster risks. From the perspective of maintaining stable economic and social activities and ensuring security, there are concerns about being excessively dependent on other countries.**

➢ **It is important to secure a strong digital infrastructure** for supporting a digital society, where demand for communications, electricity, etc. is expected to increase, **and to ensure Japan's autonomy by improving competitiveness in the digital field**.

(2) New challenges accompanying the advancement of AI

■ **While being likely to bring convenience, AI may have a wide range of risks. Japan is lagging behind the world's advanced AI countries in terms of technology, industry, and usage.**

➢ **It is necessary to promote innovation through AI and risk responses while stepping up the promotion of AI technologies, the development of AI-using industries, and the use of AI in social life.**

(3) Responding to dis-/mis-information on the Internet

■ As the Internet is becoming an important means of collecting information for people, **problems surrounding the distribution of information in the digital space are increasing, including the dissemination and spread of dis-/mis-information on the Internet**.

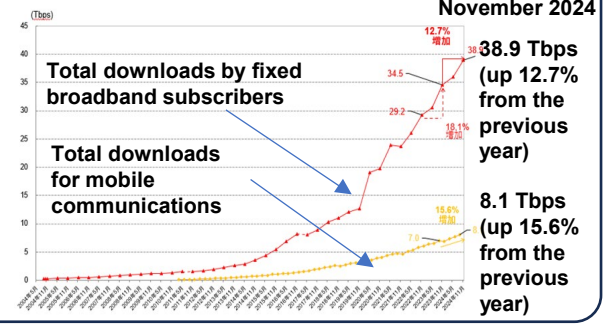
➢ **Comprehensive countermeasures against dis-/mis-information are required, including institutional responses, the development of technologies to address dis-/mis-information, and support for the development and improvement of ICT literacy among users.**

(4) Cybersecurity

■ While the use of digital technologies is expanding, **security risks are increasing** due to the sophistication of cyberattacks, against the backdrop of a destabilizing and tense global situation.

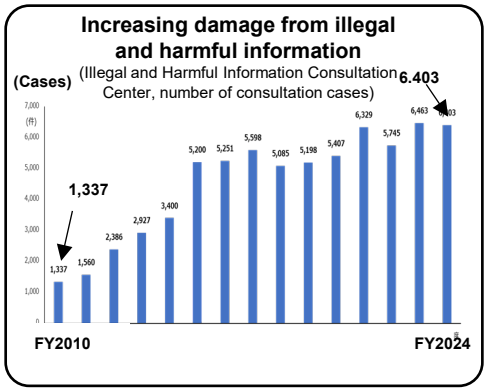
➢ **To ensure cybersecurity, it is important to take comprehensive measures by all stakeholders, including government responses, public-private collaboration, international cooperation, technological responses, and the improvement of citizens' literacy.**

Trends in Internet traffic (downloads)



(Source) Prepared from the MIC Estimates for Internet Traffic in Japan (November 2024)

Increasing damage from illegal and harmful information



- The further expansion of the effective use of advancing digital technologies is expected to contribute to solving and mitigating social issues in Japan.
- **Overview of the roles of digital technologies in solving major social issues in Japan and the prospects for solutions**

(1) Japan's economic vitalization and growth

■ **The use of digital technologies is expected to improve productivity and competitiveness. It is necessary to promote efforts to improve the international competitiveness of Japan's digital companies.**

➢ **It is desirable to promote the use of digital technology in areas where Japan has strengths and to secure international competitiveness in areas that hold the key to the next digital infrastructure and services.**

(2) Regional revitalization

■ **The issue of declining birthrates and aging populations is even more serious in rural areas**. Measures are urgently required to address issues such as the exhaustion of rural economies and the maintenance of rural social infrastructure.

➢ **It is important to thoroughly use digital technologies and new technologies for promoting initiatives to maintain and improve the living environment in rural areas and revitalize rural economies.**

(3) Responding to increasingly severe disasters

■ **As disasters become more severe and frequent** in Japan, **disaster prevention and reduction through the use of digital technologies are expected to have great effects**.

➢ Although telecommunications and broadcasting networks have been made more resilient in response to frequent disasters, such as earthquakes, **digital infrastructure is required to become more resilient**.

Importance of solving social issues (excerpts)
(Priority issues + important issues)

Preparations for natural disasters, such as disaster prevention and reduction efforts	62.1%
Medical disparities between regions due to medical personnel shortages	60.8%
Labor shortages due to declining birthrates and aging populations	60.4%
Sluggish rural economies and industries	50.4%
Securing transportation in mainly rural areas	49.4%

(Source) MIC (2025) “Survey on the latest trends in ICT, R&D, and digital utilization in Japan and other countries”

Chapter 1 Trends in the ICT Market

Chapter 2 ICT policy initiatives in the MIC