

# Chapter 1

## Penetration, Expansion, and Trends of Digital Technologies as “Social Infrastructure”

The year 2025, a quarter into the 21st century, will mark the 100th anniversary of the start of radio broadcasting in Japan (1925) and the 40th anniversary of the liberalization of telecommunications (1985), which saw the privatization of Nippon Telegraph and Telephone Public Corporation and the liberalization of telecommunication business for private companies.

When considering information and communication infrastructure, the first thing that comes to mind is communication and broadcasting networks that form the basis for information distribution. However, with the spread of the Internet and the advancement of digital technologies in all aspects of our society and economy at present, the digital ecosystem is becoming increasingly essential and it continues to expand year by year as it performs social infrastructure functions. As the impact of digital technologies and services on our lives, society and economy is expected to expand significantly in the future, both positively and negatively, it is becoming more important than ever to address challenges in the digital field and to use digital technologies to solve and mitigate social issues.

In light of the current situation in which the expansion of the digital ecosystem as social infrastructure is having a major impact on our society and economy, this Special Feature in the White Paper is titled “Digital Technologies as Spreading ‘Social Infrastructure,’” and provides

an overview of the trends in the expansion of the digital ecosystem, which functions as social infrastructure, the trends in the explosive development of artificial intelligence (AI), which is likely to permeate and influence various areas of the digital ecosystem and become a fundamental element supporting the digital society, the rise of foreign business operators that are major players in such digital sector, and the situation in Japan. Based on this, against the backdrop of today's global situation and changes in the natural environment and society, the Special Feature provides an overview of today's challenges brought about by the advancement of digital technologies and their expanding impact on society and responses to such challenges, as well as the role and prospects for digital technologies in resolving and mitigating major social issues in Japan.

Chapter 1 provides an overview of the current state of the expansion of the digital ecosystem, which currently functions as social infrastructure, the progress and utilization of AI, which is expected to become a fundamental element supporting the digital society in the future, the rise of foreign business operators in the digital field, and the current situation in Japan. Taking into account the current global situation and changes in the natural environment and society, Chapter 1 will also provide an overview of the prospect for the future digital society and the role that the evolving digital technologies should play.

### Section 1 Expansion of the Digital Ecosystem, which Functions as Social Infrastructure

As digital technologies permeate society and the digital ecosystem expands as an important and essential “social infrastructure” in social life and corporate activities, including social networking service platforms and cloud services, major changes are occurring in information gathering, communication, consumption behavior,

and corporate economic activities.

This section provides an overview of the changes and expansion of the digital field, which is highly important and essential in socio-economic activities, taking into account trends in the use of digital technologies in social life, corporate activities, administrative agencies, etc.

#### 1. Permeation and Expansion of Digital Technologies in Social Life

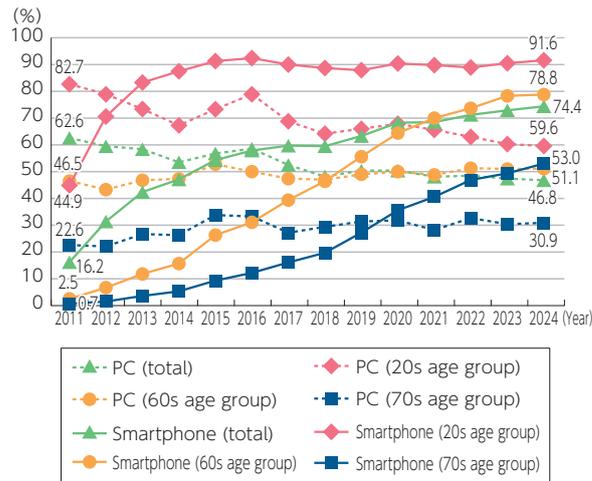
##### (1) Internet connection devices

In the past, personal computers were the main devices used to connect to the Internet, but with the increasing speed of mobile networks, cheaper mobile phone charges, and the diversification of applications available on smartphones, people, including the elderly, are shifting to smartphones.

For example, the rate of smartphone usage as an Internet connection device was 16.2% in 2011, but in-

creased to 74.4% in 2024, surpassing the rate of PC usage as an Internet connection device in 2017 (2017: smartphones (59.7%), PCs (52.5%)). Smartphones have become the mainstream Internet connection device, including among the elderly, with significant increase in both those in their 60s (2.5% in 2011, 78.8% in 2024) and those in their 70s (0.7% in 2011, 53.0% in 2024) (**Figure 1-1-1-1**).

Figure 1-1-1-1 Changes in the usage rate of Internet connection devices (PCs\*, smartphones)



\* It was "Home computer" before 2016

(Source) Prepared from the MIC "Communication Usage Trend Survey"

**Figure (related data) Changes in the usage rate of Internet connection devices (smartphone) (by age group)**  
 Source: MIC "Communication Usage Trend Survey"  
 URL: <https://www.soumu.go.jp/johotsusintokei/whitepaper/ja/r07/html/datashu.html#f00002>  
 (Data collection)

**Figure (related data) Changes in the usage rate of Internet connection devices (personal computer) (by age)**  
 Source: MIC "Communication Usage Trend Survey"  
 URL: <https://www.soumu.go.jp/johotsusintokei/whitepaper/ja/r07/html/datashu.html#f00003>  
 (Data collection)

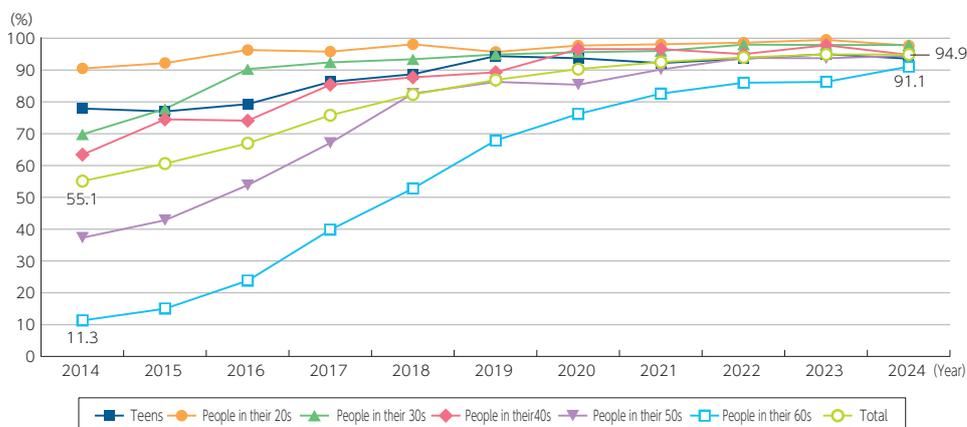
**(2) Communication tool/SNS**

The means of communication has shifted to mobile phones, and LINE has a major presence today. For example, overall LINE usage increased from 55.1% in 2014 to 94.9% in 2024<sup>1</sup>. Even among the elderly, the usage rate among people in their 60s increased from 11.3% in 2014 to 91.1% in 2024 (Figure 1-1-1-2).

Usage rates of other social networking services

(SNS), such as X (formerly Twitter) and Instagram, are also growing. While usage rates tend to be higher among younger generations in general, in 2024, the overall usage rate of X and Instagram was approximately 50%, and more than 40% of people in their 50s used them, indicating that usage is expanding across a wider range of age groups (Figure 1-1-1-3).

Figure 1-1-1-2 Changes in the LINE usage rate (by age group)<sup>2</sup>



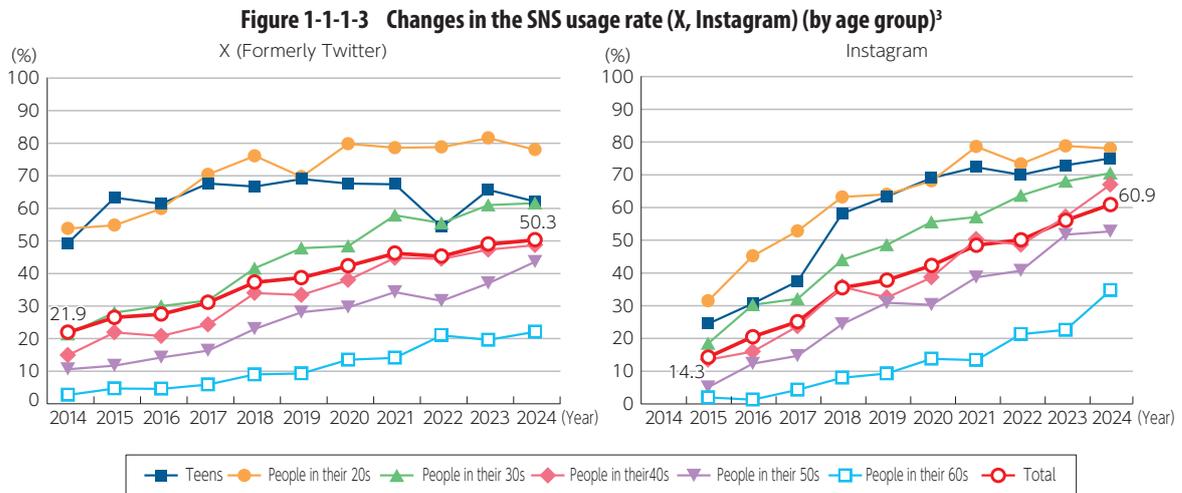
(Source) Prepared from the MIC "Survey on Information and Communication Media Usage Time and Information Behavior"

<sup>1</sup> The total usage rate for 2024 is calculated based on usage rates for people in their teens to 60s.

<sup>2</sup> The total usage rate for 2024 is calculated based on usage rates for people in their teens to 60s.



**Figure (related data) Changes in usage rates of voice call function on mobile phones and LINE**  
 Source: Prepared from the NTT DOCOMO Mobile Society Research Institute "Mobile society white paper 2024 Edition"  
 URL: <https://www.soumu.go.jp/johotsusintokei/whitepaper/ja/r07/html/datashu.html#f00005>  
 (Data collection)

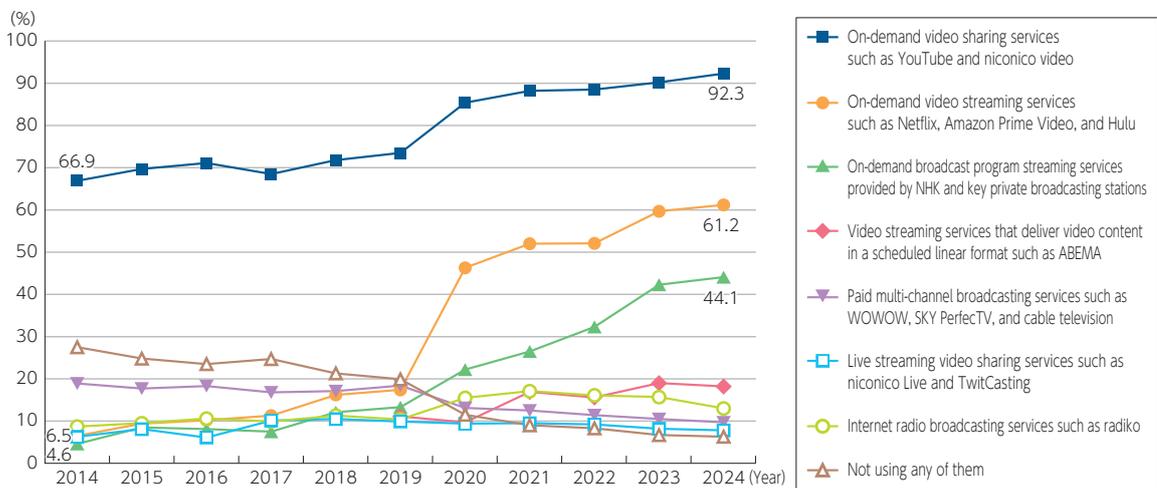


**(3) Video sharing and distribution services**

The number of video service users has increased significantly since 2020 as people took advantage of the time they spent at home during the COVID-19 pandemic, and usage rates still remain high. In particular, there has been an increase in the number of users of on-de-

mand video sharing services such as YouTube, on-demand video streaming services such as Netflix, and on-demand broadcast program streaming services provided by television stations (**Figure 1-1-1-4**).

**Figure 1-1-4 Changes in the usage rate of video and radio services using the Internet<sup>4</sup>**



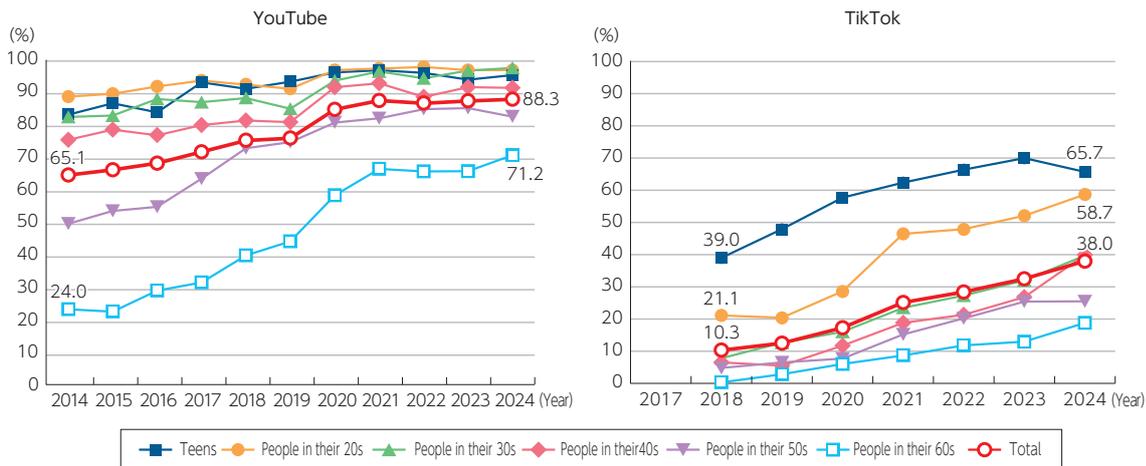
Looking at usage trends for individual video sharing services, YouTube, for example, shows high usage rate across almost all generations, exceeding 80% of all generations up to their 50s in 2024, and over 70% of people in

their 60s are using it. TikTok usage has grown significantly in recent years, especially among teenagers and people in their 20s, and it exceeded 50% among both generations in 2024 (**Figure 1-1-1-5**).

<sup>3</sup> The total usage rate for 2024 is calculated based on usage rates for people in their teens to 60s.

<sup>4</sup> The total usage rate for 2024 is calculated based on usage rates for people in their teens to 60s.

Figure 1-1-1-5 Changes in usage rates of YouTube and TikTok (by age group)<sup>5</sup>



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

Additionally, among video streaming services, Amazon Prime Video and Netflix have seen particularly high

usage rates in recent years.



Figure (related data) Changes in usage rates of various video services

Source: Prepared from the MIC "Survey on Information and Communication Media Usage Time and Information Behavior"  
 URL: <https://www.soumu.go.jp/johotsusintokei/whitepaper/ja/r07/html/datashu.html#f00009>  
 (Data collection)

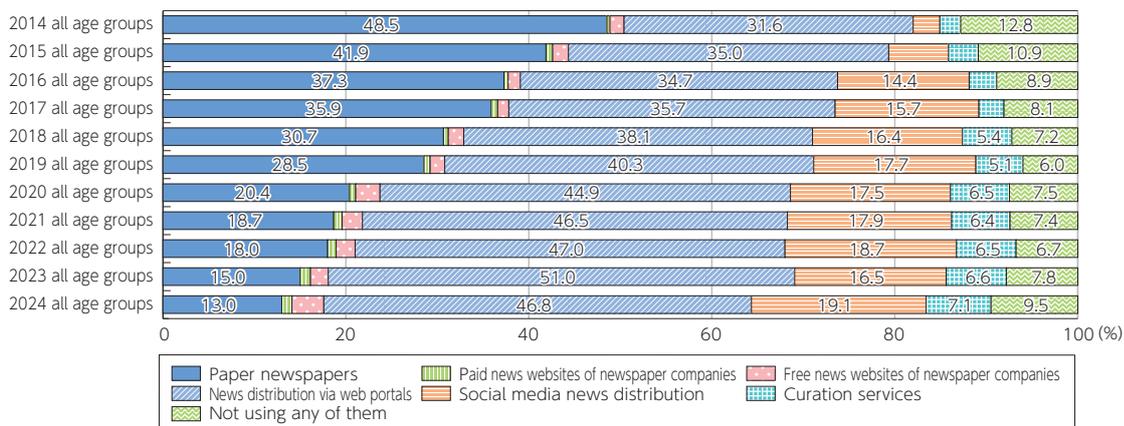
(4) Information gathering means

With the expansion of Internet portal sites and news distribution via social media, and the increasing SNS usage rate, the Internet is becoming an important means for people to gather information.

For example, the most commonly used text-based news services are news distribution via portal sites, news distribution via social media, and curation services,<sup>6</sup> the sum of which accounted for 36.8% in 2014 and rose to 73.0% in 2024<sup>7</sup> (Figure 1-1-1-6).

Additionally, according to a survey conducted by the Japan Press Research Institute in 2024, when asked about their impressions of each medium, a higher percentage of all generations up to their 50s answered that the Internet was "an indispensable source of information" than newspapers or television, suggesting that the Internet is becoming increasingly seen as an indispensable source of information (Figure 1-1-1-7).

Figure 1-1-1-6 Changes in the most commonly used text-based news services<sup>8</sup>



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

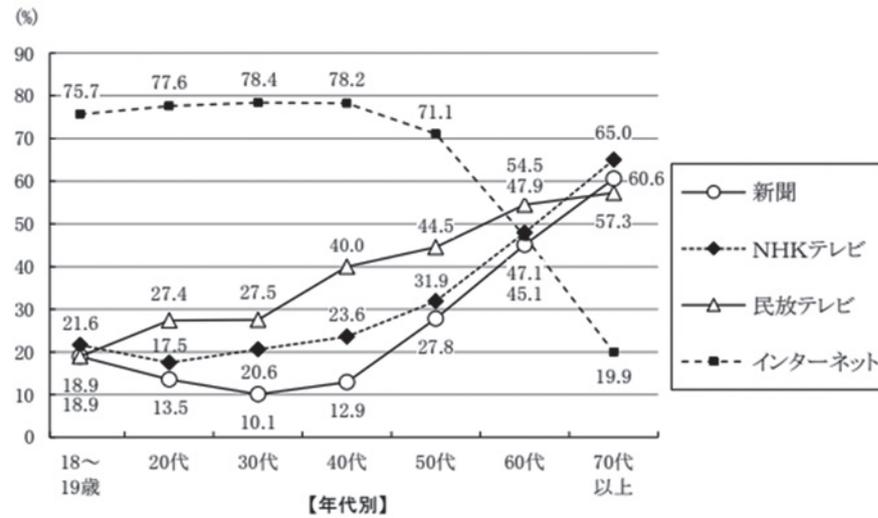
<sup>5</sup> The total usage rate for 2024 is calculated based on usage rates for people in their teens to 60s.

<sup>6</sup> News apps such as SmartNews, Gunosy, and NewsPicks

<sup>7</sup> The total usage rate for 2024 is calculated based on usage rates for people in their teens to 60s.

<sup>8</sup> The total usage rate for 2024 is calculated based on usage rates for people in their teens to 60s.

Figure 1-1-1-7 Indispensability of each medium as a source of information (by age group, 2024)

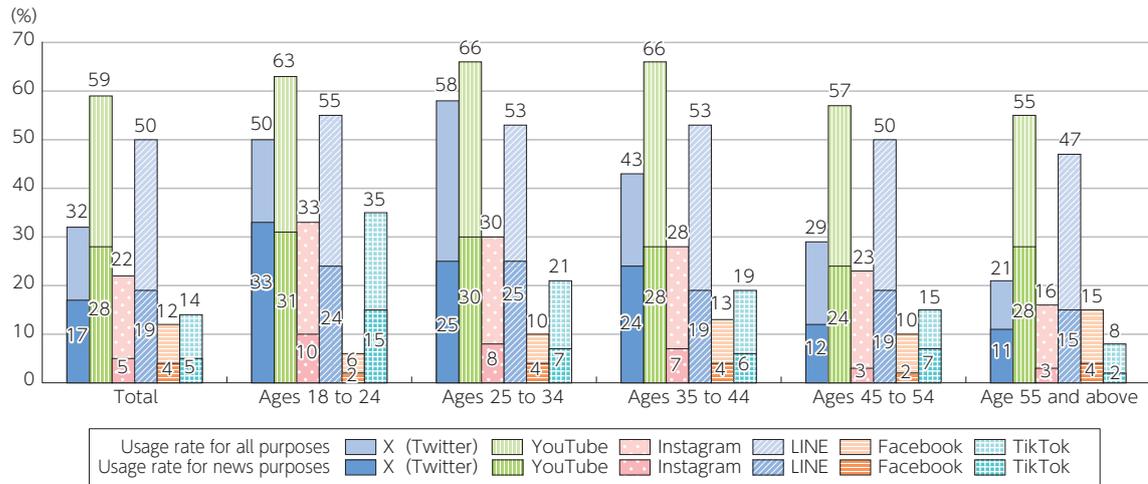


(Source) Japan Press Research Institute (2024) "The 17th National Public Opinion Survey on Media"

Furthermore, according to a survey conducted in 2024 by an organization of the University of Oxford in the UK, the usage rate of social media for news purposes in Japan is high for YouTube, X, and LINE. In particular, about 30% of all generations use YouTube for news pur-

poses (Figure 1-1-1-8). On the other hand, in terms of media reliability, the reliability of the Internet is lower than that of TV and newspapers for all generations (Figure 1-1-1-9).

Figure 1-1-1-8 Usage rate of social media as a news source (by age group, all respondents in Japan, 2024)<sup>9</sup>



(Source) Prepared from the Reuters Institute for the Study of Journalism "Digital News Report" (2024)<sup>10</sup>

Figure 1-1-1-9 Reliability of media (by age group, 2024)

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

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

<sup>9</sup> In this survey, respondents were asked whether they used the Internet within the past week. On the other hand, in MIC "Survey on Information and Communication Media Usage Time and Information Behavior" (Figure 1-1-1-2, Figure 1-1-1-3, Figure 1-1-1-5), respondents were asked about the use of the Internet without particular restrictions on the period of use.

<sup>10</sup> <https://reutersinstitute.politics.ox.ac.uk/digital-news-report/2024>

**(5) Shopping, payment**

Internet use for shopping purposes is also increasing year by year. According to a survey by the Ministry of Economy, Trade and Industry (METI), the size of the e-commerce (EC) market between businesses and consumers (B2C) has been expanding in recent years in the areas of merchandise sales, services and the digital field. The items available for purchase through e-commerce are expanding beyond books and home appliances

to include household goods and clothing.

Payment methods are shifting from cash to cashless payments. According to a survey by the METI, the percentage of cashless payments has been steadily increasing, reaching 42.8% in 2024. The use of QR code payment is also continuing to expand, accounting for 9.6% of all cashless payments as of 2024.



**Figure (related data) Changes in cashless payment amounts and its percentage**  
 Source: METI "2024 Ratio of Cashless Payment Among the Total Amount Paid by Consumers Calculated"  
 < <https://www.meti.go.jp/press/2024/03/20250331005/20250331005.html>> (Reference May 9, 2025)  
 URL: <https://www.soumu.go.jp/johotsusintokei/whitepaper/ja/r07/html/datashu.html#f00016>  
 (Data collection)

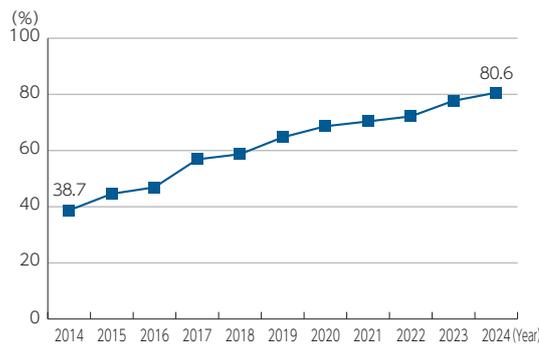
## 2. Penetration and Expansion of Digital Technologies in Corporate Activities

**(1) Cloud services**

The use of cloud services in general by companies is expanding year by year. Combining company-wide use and use at some business locations or departments, 80.6% of companies used cloud services in 2024 (Figure 1-1-1-12). The services for which cloud is used are diverse, with particularly high usage rates for "file stor-

age and data sharing," "internal information sharing and portal," "email," "payroll, financial accounting, and human resources management," and "schedule sharing," and cloud usage continues to grow steadily (Figure 1-1-1-13).

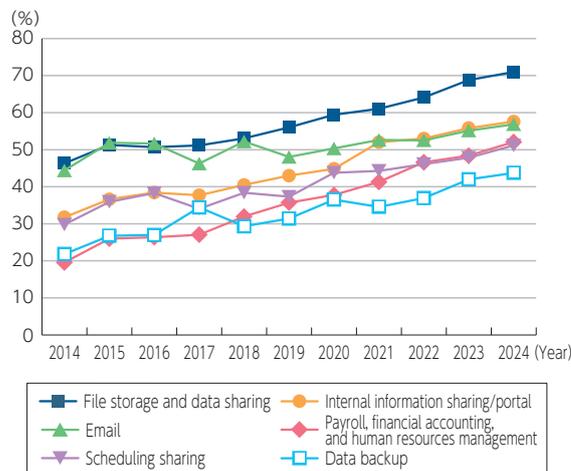
**Figure 1-1-1-12 Changes in the use of cloud services**



\* Combined company-wide use and use at some business locations or departments

(Source) Prepared from the MIC "Communication Usage Trend Survey"

**Figure 1-1-1-13 Changes in the use of cloud services (by usage purpose)**



\* The survey is aimed at companies that use cloud services.

(Source) Prepared from the MIC "Communication Usage Trend Survey"

**(2) Customer contact and transactions between businesses**

The use of digital space is becoming increasingly important for information dissemination including advertising from companies to customers.

Internet advertising expenditures reached 3.7 trillion yen in 2024, accounting for 47.6% of total advertising expenditures. Since the Internet overtook the four mass media outlets<sup>11</sup> in 2021, the gap has been widening.<sup>12</sup>

Additionally, the use of SNS as a corporate advertising

medium is also expanding. According to a survey by Teikoku Databank, in 2023, 40.8% of companies used SNS to disseminate information externally, with the rate of SNS use being particularly high among B2C companies.

The size of business-to-business (B2B) e-commerce (EC) market is expanding as EC advances, and according to a survey by the METI, the EC rate was 40.0% in 2023.



**Figure (related data) SNS usage status for external parties**

Source: Teikoku Databank (2023) "Questionnaire on trends in the use of SNS in businesses"  
 URL: <https://www.soumu.go.jp/johotsusintokei/whitepaper/ja/r07/html/datashu.html#f00019>  
 (Data collection)



**Figure (related data) Changes in the size of the business-to-business e-commerce market**

Source: METI "E-commerce market survey"  
 URL: <https://www.soumu.go.jp/johotsusintokei/whitepaper/ja/r07/html/datashu.html#f00020>  
 (Data collection)

**3. Penetration and Expansion of Digital Technologies in Administrative Services**

Administrative procedures, one area where digital technologies are being utilized in government agencies, are also seeing increased use of online services.

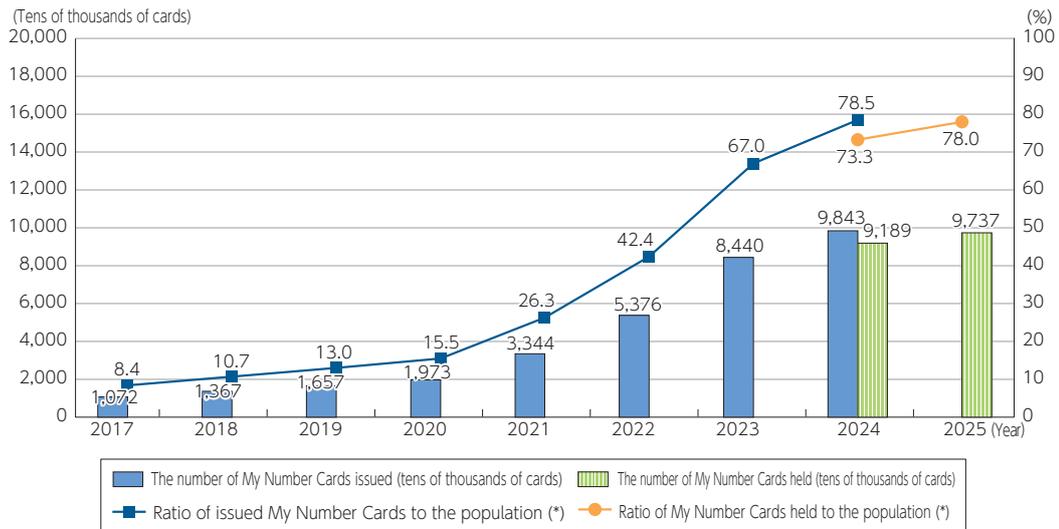
For example, the number of My Number Cards held by the population (calculated by subtracting cards abolished due to death or expiration from the total number issued), which serve as the basis for identity verification in electronic applications, reached 78.0% of the population as of the end of February 2025 (Figure 1-1-1-14).

The use of electronic filing is also increasing in various fields. For example, according to the National Tax

Agency, out of the total number of filing procedures, the proportion of corporate tax returns using e-Tax reached 86.2% as of FY2023, and 69.3% for income tax returns, indicating steady increase. In particular, the use of personal income tax returns has increased significantly from 44.0% in FY2018, due to factors such as the widespread use of My Number Cards.

In the "Priority Plan for Realizing a Digital Society," the online usage rate for procedures that local governments are expected to prioritize for going online was 57.6% in FY2022<sup>13</sup>.

**Figure 1-1-1-14 Changes in the Status of Spread of My Number Card**



\* The number of My Number Cards issued as of March of each year (April for 2019, January for 2025)

(Note) From 2024 onward, the number of My Number Cards held (calculated by subtracting cards abolished due to death or expiration from the total number issued) is listed

(Source) Prepared from MIC "The Status of Issuance of My Number Card"

<sup>11</sup> Newspaper, magazine, radio, television media

<sup>12</sup> Refer to "Advertising" in Section 3, 2 (2), Chapter 1, Part II

<sup>13</sup> Refer to "Trends in digital usage in administration" in Section 11 (3), Chapter 1, Part II

## 4. Importance and Indispensability of Digital Services in Everyday Life and Corporate Activities

### (1) Everyday life

A questionnaire survey for individuals was conducted regarding their usage of digital services, such as, among others, information gathering and dissemination on SNS and shopping. In the survey, respondents were asked about the impact of each digital service for which they said “I usually use” if the service was suspended, and the possibility of using other services as an alternative.

As a result, regarding the impact of a service suspension, over 40% of respondents answered, referring to stock trading, online banking, payment, settlement, or messaging services, if they are suspended, “It would cause major disruption to their daily lives.” As for the impact of the service suspension, a high percentage of respondents said, regarding a wide range of digital services, “Although there are alternative services, it would

be very inconvenient.” The results are considered to indicate that a wide range of digital services are widely recognized as being high in their “indispensability” and “importance.”

When respondents were asked about the challenges of replacing the services they currently use with services from other companies, a high percentage of respondents cited issues with “SNS” and “messaging services” in terms of connections with people and data, and with “schedule management” and “file sharing” in terms of the difficulty of transferring stored data. These reasons are considered to partly explain why the users of digital services have difficulty changing to alternative digital services provided by other companies.



**Figure (related data) Impact of service suspension (Services the respondents said “I usually use”)**

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

URL: <https://www.soumu.go.jp/johotsusintokei/whitepaper/ja/r07/html/datashu.html#f00023>

(Data collection)



**Figure (related data) Possibility of changing to other alternative services (Services the respondents said “I usually use”)**

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

URL: <https://www.soumu.go.jp/johotsusintokei/whitepaper/ja/r07/html/datashu.html#f00024>

(Data collection)

### (2) Business activities

Regarding the operations that use cloud services in companies, a questionnaire survey was conducted on each cloud service that respondents answered, “We use it (either almost all, about half, or only some)” to find out the impact of the service if suspended and the possibility of replacing it with another service.

As a result, it was found out that the cloud services used by companies that have a significant impact, such as “it would be difficult to continue business activities without the service” or “it would cause major disruption to business operations without the service,” cover a wide range of fields, including “email,” “file storage and data sharing,” “internal information sharing,” “payroll, financial accounting, and human resources management,” and “data backup.” This is considered to indicate

that cloud services have become an important and indispensable part of today’s business activities.

Additionally, when asked about challenges in replacing their current cloud services with other cloud services or in-house built systems, respondents cited increased operational costs and reduced service levels as the most significant issues across many services. On the other hand, the percentage of respondents who said there were no alternative services was generally low. Regarding the cloud services currently used by companies, even if there are alternative services available, it is suggested that it would be difficult to replace them with other services from the perspective of cost and service level maintenance.



**Figure (related data) Position of cloud services currently in use**

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

URL: <https://www.soumu.go.jp/johotsusintokei/whitepaper/ja/r07/html/datashu.html#f00025>

(Data collection)



**Figure (related data) Possibility of replacing their current cloud services with other cloud services or in-house built systems**

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

URL: <https://www.soumu.go.jp/johotsusintokei/whitepaper/ja/r07/html/datashu.html#f00026>

(Data collection)