

Section 3 Foreign Business Operators' Rise in the Digital Field and the Relevant Current Situation in Japan

Overseas platform operators have grown significantly by taking advantage of the characteristics that are easily manifested in digital markets, the data they collect, and the enormous profits, and they have a strong presence in Japan as well. They have expanded from their traditional business fields into other digital fields, and recently their influence has expanded to include physical infrastructure such as submarine cables and power plants.

On the other hand, the share of Japanese companies in the global digital market remains low overall, and the deficit in the balance of international payments in the digital field is on the rise due to factors such as the increasing use of digital technologies in social life and cor-

porate activities in Japan and the low international competitiveness of Japan's digital industry.

At present, using the excellent digital services available on the market has positive aspects, such as accelerating digitalization. However, if Japan's international competitiveness in the digital field remains low and its dependence on foreign business operators in key digital fields continues to grow, it is pointed out that there are concerns that Japan will lose the opportunity to incorporate the benefits of the rapidly growing digital field into its economic growth, as well as concerns from the perspective of economic security and other aspects.

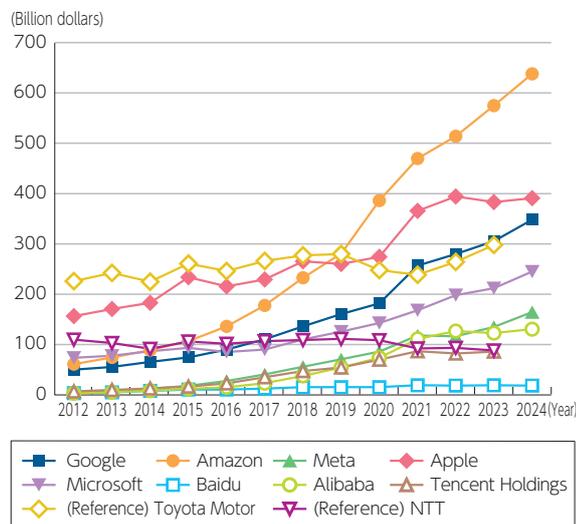
1. Rise of Overseas Big Tech Companies

(1) Growth of platform operators and its background

Big tech companies, including overseas digital platform operators, have a great presence in providing SNS, cloud services, and other services that are forming the new digital infrastructure of society. These overseas businesses have grown rapidly by taking advantage of various characteristics that are easily manifested in the

digital market, as well as the data they collect and the enormous profits. For example, digital platform operators, primarily Google, Apple, Facebook (Meta), Amazon, and Microsoft, have grown to boast world-class levels of both sales and market capitalization (Figure 1-1-3-1)¹.

Figure 1-1-3-1 Trends in sales of foreign platform operators



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

The rise of giant digital platform operators is driven by characteristics that can be explained by various economic concepts, such as the “network effect,” where the value of a service increases as the number of users increases; the “low marginal cost” of providing additional services in comparison to huge fixed costs and the resulting “economies of scale;” and the “lock-in effect,” where users find it difficult to switch from a familiar ser-

vice to another service. These characteristics are not inherent to digital goods alone, but they are more likely to manifest in the digital market, and the market structure makes it easier for businesses that take the lead in the market by using mechanisms that effectively utilize these characteristics to establish an overwhelming competitive advantage.

¹ For the top 15 companies by market capitalization in the global ICT market, see “Market trends” in Section 6 (1), Chapter 1, Part II

(2) Growing influence of big tech companies across fields

Big tech companies are expanding their influence across all layers of the digital industry through technological innovation and market expansion, operating across multiple fields. These companies initially started out by providing applications and services for users, and have gradually expanded and become more involved in the physical infrastructure layer. Today, big tech companies are strengthening their influence across many areas, from digital industries such as cloud services, data

A Network infrastructure layer

Big tech companies have begun investing in communications infrastructure to improve the efficiency of data transmission, etc. Particularly noteworthy is the investment in submarine cables. In order to improve the efficiency of its communications infrastructure and reduce costs, Google laid its own submarine cables and established a high-speed communications network between its data centers. Meta, Microsoft, and Amazon are also participating in the construction of submarine cables². This allows big tech companies to boost intercontinental data transfer speeds, improve the quality of their services and strengthen their influence in the communications infrastructure market.

Until the early 2010s, the laying and use of submarine

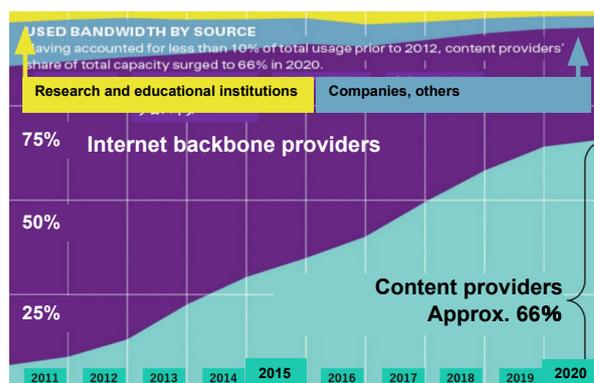
centers, and communications infrastructure to power infrastructure, and are also taking the lead in new technological innovations such as generative AI.

Here, the approaches of big tech companies to the network infrastructure layer, energy supply layer, and generative AI, which are areas where new movements by such companies have been particularly significant in recent years, will be discussed.

cables was dominated by telecommunications carriers (Internet backbone providers), and in 2011, content providers³ accounted for less than 10% of the submarine cable bandwidth use. However, since the late 2010s, big tech companies such as Google, Meta, Microsoft, and Amazon have expanded their installation and use of submarine cables, and in 2020, content providers accounted for nearly 70% of the submarine cable bandwidth use (Figure 1-1-3-2).

With submarine cables carrying 99% of international communications, big tech companies are exerting a major presence in submarine cable investment, changing the traditional telecommunications carrier-led market structure.

Figure 1-1-3-2 Changes in submarine cable bandwidth use



(Source) Prepared based on TeleGeography "A Complete List of Content Providers' Submarine Cable Holdings"

B Energy supply layer

Operating a data center requires a huge amount of electricity, and a stable power supply is essential for the business of big tech companies. As demand for generative AI increases in the future, it is expected that demand for electricity will also increase. With the aim of increasing the stability and cost-effectiveness of energy sup-

plies and the use of renewable energy, some big tech companies are stepping up their involvement through contracts and investments in power plants. For example, Google signed contracts for solar power plants being developed at over 800 locations across Japan⁴.

C Leading the field of generative AI

Big tech companies are leveraging their enormous fi-

nancial resources, advanced technological development

² DIAMOND Online "Major telecommunications companies fall, Google and Facebook take center stage, shifting the driving force behind submarine cable laying" (October 5, 2022) (<https://diamond.jp/articles/-/310530>)

³ "Content providers" here refers to networks known as hyperscalers, over-the-top providers, Internet content providers, cloud service providers, etc., including Internet-based content and platform providers (e.g., Google, Meta, Microsoft, Apple), cloud service/platform providers (e.g., Amazon, Microsoft, Oracle, Alibaba, Google), and content delivery networks (CDNs) (e.g., Akamai, CloudFlare).

⁴ MIC/METI Expert Group Meetings on Development of Digital Infrastructures (e.g., DCs) (7th) materials "The environment and challenges surrounding Japan's digital infrastructure" (May 30, 2024) (https://www.meti.go.jp/policy/mono_info_service/joho/conference/digital_infrastructure/0007/007_widepj.pdf)

capabilities, world-class human resources, and the vast amounts of data they accumulate every day to establish an overwhelming lead in the field of generative AI and maintain competitiveness. This competitiveness is supported by the multi-layered foundations that these companies have built, creating advantages that cannot be easily emulated.

Regarding the status of LLM development by big tech companies and the social implementation of generative AI, for example, Microsoft collaborates with OpenAI to develop “Copilot” and is working to integrate generative AI into business tools⁵. Meta also makes “Llama,” an LLM developed by the company, publicly available, creating an ecosystem that can be used by many companies⁶. Through these efforts, big tech companies have comprehensive influence over everything from applica-

tions to models and infrastructure (computing resources, data, and specialized human resources), and are driving the evolution and social implementation of generative AI technology.

Although U.S. big tech companies still occupy a major position at each layer, in recent years leading companies around the world, including those in China, have also been focusing on AI business.⁷

In this way, overseas big tech companies have come to exert influence in a wide range of areas, from the foundations of the digital industry to cutting-edge technology. As a result, this movement is bringing about major changes to the traditional industrial structure and having a significant impact on existing telecommunications companies, energy companies, and even startups developing AI.

2. Presence of Foreign Business Operators in the Digital Market and the Current State of Japan’s Competitiveness

While overseas big tech companies, including overseas platform operators, have grown significantly and are exerting a major presence in many digital markets around the world, including Japan, the presence and international competitiveness of Japan’s digital industry in the global market cannot be said to be strong in many

areas. This section presents the current competitiveness of Japan’s digital industry as suggested by the share of Japanese companies in the domestic and global digital markets, balance of payments statistics (balance of payments for services) and trade statistics related to the digital field.

(1) Trends in the share of Japanese companies in the global and domestic digital markets

Foreign business operators have a significant presence in digital services, equipment, and devices, which

play an important role in today’s digital society.

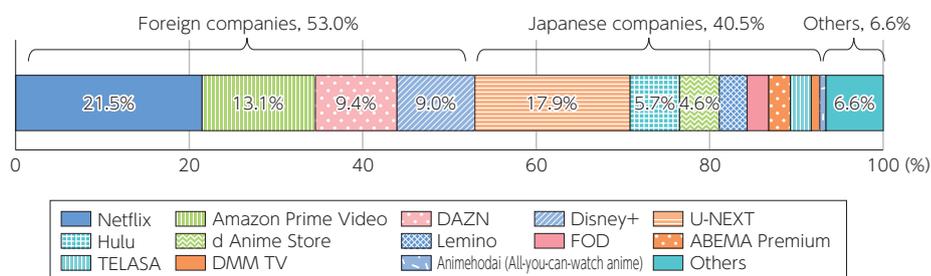
A Domestic market share and trends

Regarding cloud services, in the IaaS and PaaS market in Japan, three companies - Amazon Web Services, Microsoft, and Google - are significantly expanding their market share. Furthermore, Netflix had the highest market share of 21.5% in Japan for subscription video streaming market in 2024, with foreign companies accounting for more than half of the domestic market share (Figure 1-1-3-5).

In terms of video sharing services and SNS in Japan, the usage rate of YouTube exceeded 80% in 2024, and usage rates of foreign business operators’ services such as X, Instagram, and TikTok are increasing year by year⁸.

When it comes to digital devices, for example, foreign business operators accounted for a large proportion of the Japanese smartphone market share in 2024, with 59% for Apple, followed by 10% for Google (Figure 1-1-3-6).

Figure 1-1-3-5 Japanese market share by subscription video streaming service (2024)



(Source) Prepared from GEM Partners Inc. materials⁹

⁵ NIKKEI FT the World “U.S. Microsoft and Google’s rising AI costs alarm investors” (February 5, 2024) (<https://www.nikkei.com/prime/ft/article/DGXZQOCB0229Z0S4A200C2000000>)

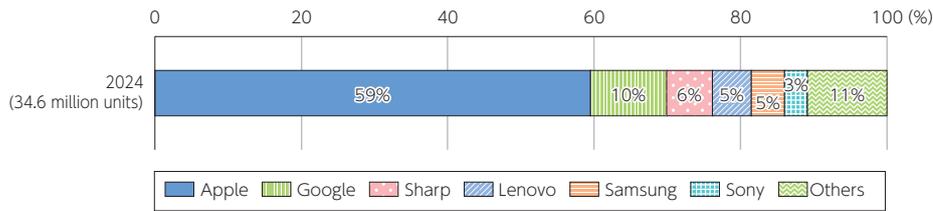
⁶ METI Commerce and Information Policy Bureau “Towards the realization of a digital society” (October 2024) (https://www.meti.go.jp/shingikai/sankoshin/shin_kijiku/pdf/024_04_00.pdf)

⁷ For other AI initiatives by platform operators in the U.S. and China, see “Trends of major platform operators” in Section 6 (2), Chapter 1, Part II

⁸ See Section 1, 1 (2) (3), Chapter 1, Part I

⁹ GEM Partners Inc. “Subscription video streaming market estimated to reach 526.2 billion yen in 2024, with U-NEXT seeing the largest share growth and closing in on Netflix, which has held the top spot for six consecutive years” < <https://www.gem-standard.com/columns/1023>>

Figure 1-1-3-6 Japanese smartphone market share (2024)



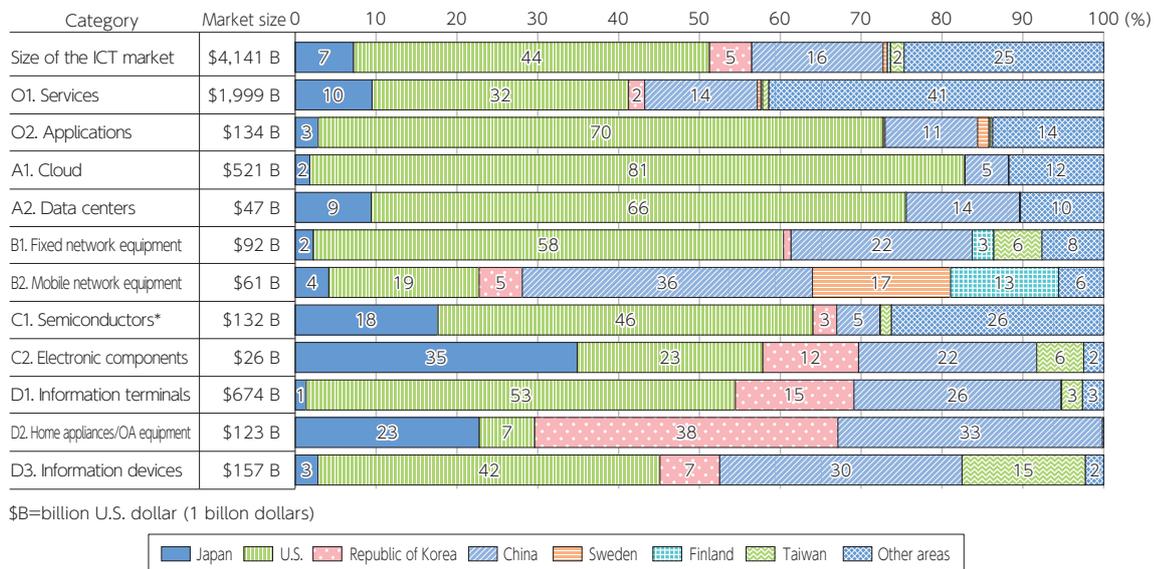
(Source) Omdia

B Global market share and trends

Looking at the sales-based share of Japanese companies in the global digital market¹⁰ by category, it is estimated that in 2023, with the exception of some categories such as semiconductors, electronic components, home appliances, and office equipment, their share generally remained around 10% or less (Figure 1-1-3-7). Looking at individual devices and services, Japanese

companies only had a single-digit share in the large global market for smartphones, PCs, and servers. Although Japanese companies' global share of mobile phone base stations overall is single digits, it accounts for 29% of the open vRAN¹¹ market alone (Figure 1-1-3-8).

Figure 1-1-3-7 Estimated share of the global ICT market by country and region (by category) (2023)



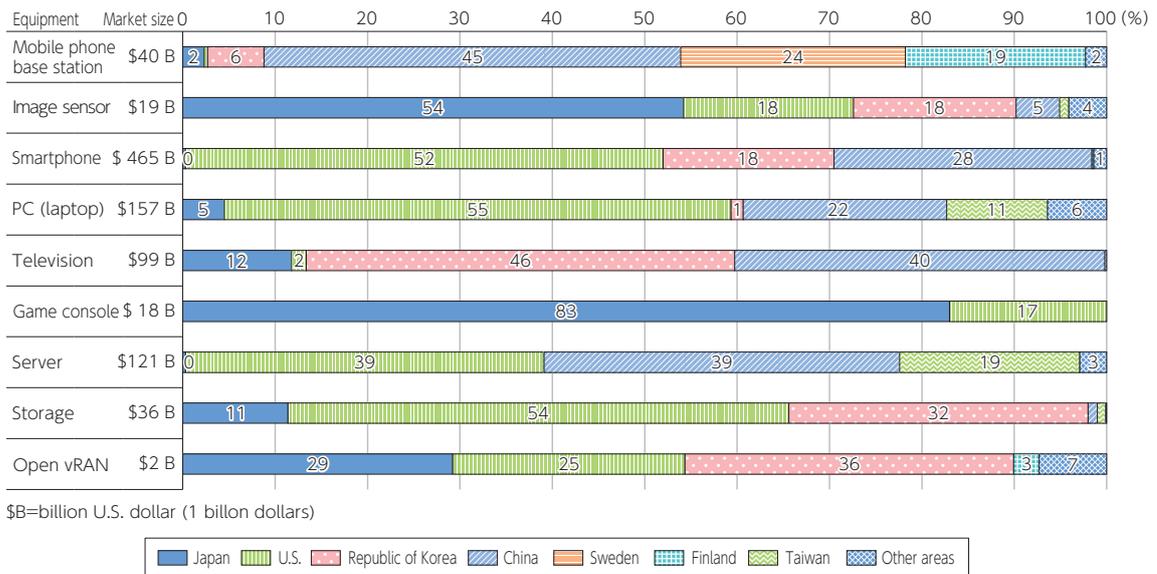
* Excludes semiconductors that can be used for AI applications (AI semiconductors), such as GPUs and MPUs, the latter of which are equipped with built-in AI accelerators.

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

¹⁰ Prepared from the MIC "International IoT Competitive Index" (2023) This share is based on data compiled by company headquarters location for approximately 1,700 companies worldwide. Note that due to limitations of the compiled data, it may not be possible to comprehensively calculate all companies. 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.

¹¹ A standardized system that converts base station functions into software and allows devices and software from different manufacturers to be combined.

Figure 1-1-3-8 Estimated share of the global ICT market by country and region (by device) (2023)



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



Figure (related date) Estimated share of the global ICT market by country and region (by category) (comparison between 2018 and 2023)

Source: Prepared from the MIC "International IoT Competitive Index"
 URL: <https://www.soumu.go.jp/johotsusintokei/whitepaper/ja/r07/html/datashu.html#f00057>
 (Data collection)



Figure (related date) Estimated share of the global ICT market by country and region (by device) (comparison between 2013 and 2023)

Source: Prepared from the MIC "International IoT Competitive Index"
 URL: <https://www.soumu.go.jp/johotsusintokei/whitepaper/ja/r07/html/datashu.html#f00058>
 (Data collection)

(2) Trends in the balance of services of digital-related items

Regarding the services account in the balance of payments statistics, the Bank of Japan Review titled "Globalization of Services Trade as Seen in Balance of Payments Statistics"¹² examines changes in the balance of payments for items classified as digital-related, including (1) computer services; (2) copyright royalties; (3) professional and business consulting services; (4) communications services; and (5) information services (hereinafter referred to as "digital-related items"). Looking at the balance of payments for items (1) to (3), in particular, the deficit has been increasing rapidly in recent years, attracting attention as the so-called "digital deficit."¹³ It should be noted that this includes balance of payments related to services other than the digital

field¹⁴.

For example, in 2024, the total balance of payments of (1) computer services, (2) copyright royalties, and (3) professional and business consulting services was in the red by approximately 6.7 trillion yen (an increase of approximately 0.9 trillion yen from the previous year) (if (4) communications services and (5) information services are added to this, the deficit would have been approximately 6.8 trillion yen (an increase of approximately 0.9 trillion yen from the previous year))¹⁵. Compared with 2014, the deficit for "copyright royalties" increased by approximately 2.1 times, "computer services" by approximately 3.3 times, and "professional and business consulting services" by approximately 5.4 times in

¹² Bank of Japan "Bank of Japan Review 'Globalization of Services Trade as Seen in Balance of Payments Statistics'" (August 2023) <https://www.boj.or.jp/research/wps_rev/rev_2023/data/rev23j09.pdf>

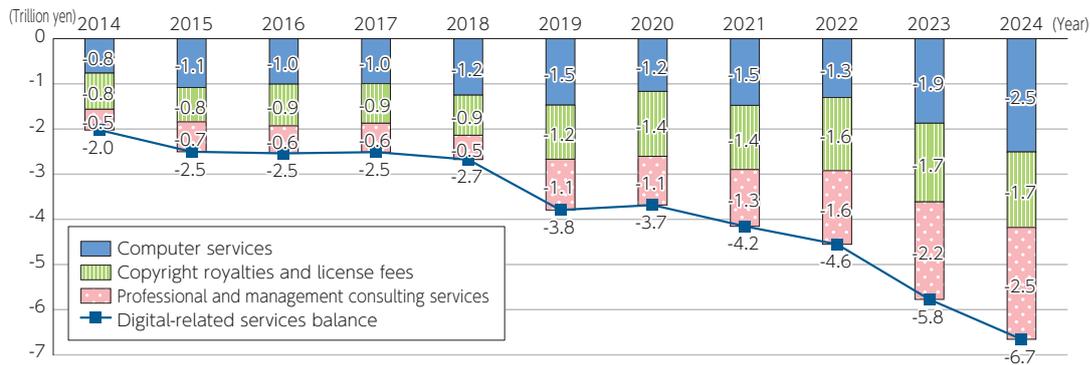
¹³ In some cases, communication services and information services are also included and classified as the so-called "digital deficit."

¹⁴ Computer services include service transactions such as contract software development, computerized information processing, and hardware consulting, maintenance, and repair, as well as license fees when end users acquire general-purpose software such as games online, and the purchase and sale fees for software copyrights. Copyright royalties include license fees for the reproduction and distribution (sale, free distribution, etc.) of copyrighted works (computer software, music, video, characters, literature, academic works, art, etc.). Professional and business consulting services include service transactions related to legal, accounting and management consulting, public relations, advertising and market research. For details of services included in each item, see "Exports and imports in the ICT field" in Section 1 (4), Chapter 1, Part II

¹⁵ For changes in the balance of payments for "digital-related items" when communication services and information services are included, see "Exports and imports in the ICT field" in Section 1 (4), Chapter 1, Part II

2024^{16,17} (Figure 1-1-3-9).

Figure 1-1-3-9 Changes in the ¹⁸digital-related services balance



* The total balance of payments of computer services, copyright royalties, and professional and business consulting services

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

(3) Trends in trade statistics for ICT goods

Based on trade statistics from the Ministry of Finance, the difference between the amount of ICT goods^{19,20} exported from Japan and the amount of ICT goods imported²¹ into Japan shows that the deficit has been increasing in recent years, reaching a deficit of approximately 3.4 trillion yen in 2024²². Looking at the breakdown by item, the largest surplus in 2024 was recorded in "other electronic components," followed by "integrated cir-

cuits." On the other hand, the largest deficit was recorded in "mobile phones," and the deficit has been expanding in recent years. The largest deficits were followed by "personal computers," "electronic computer units (excluding personal computers)," and "wired telecommunications equipment." Parts and materials tend to have larger surpluses, while final products tend to have larger deficits.

¹⁶ As background to the increase in the deficit for "digital-related items," for example, the Cabinet Office's "Annual Report on the Japanese Economy and Public Finance FY2024" (August 2024) states that the domestic market size for cloud services, internet advertising, and video streaming has expanded significantly, and points out that an estimate of overseas payments for cloud services shows that the pace of increase has accelerated in recent years, which is thought to explain much of the increase in payments for "computer services." It also points out that much of the increase in the deficit in the "professional and business consulting services" field can be explained by the increase in overseas payments related to Internet advertising in recent years, and that when the deficit for "copyright royalties" is compared with the difference between domestic content-related payments and sales by domestic companies, the increasing trend is similar, although at different levels.

¹⁷ Regarding Japan's overall balance of payments and digital-related balance, the Ministry of Finance's "Issues of Japan's economy and prescriptions for them from the perspective of international balance of payments" panel report (July 2, 2024) states, "Japan's current account balance records a stable surplus, with the surplus in FY2023 being the largest ever," and "Japan's net external assets reaches a record high of 471 trillion yen at the end of 2023, making it the world's largest net asset nation for the 33rd consecutive year." It states, "Looking at each item, only the primary income balance is recording a surplus, while the trade balance is in deficit and the deficit in cutting-edge field such as the digital field is widening in the services balance." It also states, "Forecasts by major think tanks indicate that the current account surplus will shrink or even turn into a deficit as the declining birthrate and aging population continue to progress."

¹⁸ This is sometimes discussed under the terms "digital deficit" or "digital-related balance," but here it is referred to as the "digital-related services balance" in order to distinguish it from trade in ICT goods, which will be explained below.

¹⁹ The following goods are included in the scope of ICT goods in the MIC's "Infor-communications Industry Input-Output Table."

Personal computers, electronic computer units (excluding personal computers), electronic computer accessories, wired telecommunications equipment, mobile phones, wireless telecommunications equipment (excluding mobile phones), communication cables and optical fiber cables, office machines, semiconductor elements, integrated circuits, liquid crystal panels, flat panels and electron tubes, and other electronic components

²⁰ The scope of ICT goods here is different from the "digital-related goods" compiled by the Japan External Trade Organization (JETRO) in its "JETRO Global Trade and Investment Report." For example, "semiconductor manufacturing equipment," which is included in "digital-related goods" in the "JETRO Global Trade and Investment Report," is not included in the ICT goods here.

²¹ The import value in trade statistics is based on CIF (Cost, Insurance and Freight, which includes the price of the cargo as well as insurance and freight to the destination), and the export value is based on FOB (Free on Board, which is the shipping price in the exporting country. It does not include insurance and freight to the destination after shipping). The difference between the export value and the import value here is calculated mechanically.

²² It is important to note that these statistics only show the amount of exports from Japan to overseas countries and the amount of imports from overseas countries to Japan, and do not reflect exports from Japanese companies' overseas production bases to countries other than Japan, and that when products produced by Japanese companies at their overseas bases are imported into Japan, it is counted as an "import."