Report Regarding Generative AI

ver. 1.0

June 2025

Japan Fair Trade Commission

Report Regarding Generative AI ver. 1.0 (Summary)

公正取引委員会
Japan Fair Trade Commission

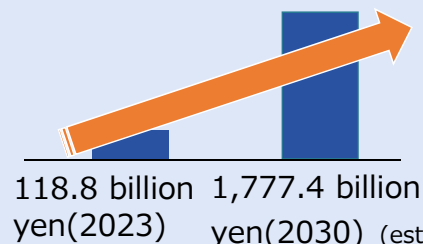## 1. Background of the Start of The Market Study

✓ Generative AI has both advantages and disadvantages.

Potential for new innovations

- Business transformation and creation of new business models
- Various economic and social benefits, such as business productivity improvement and new services

(Generative AI market size in Japan*)

118.8 billion yen(2023)　1,777.4 billion yen(2030) (estimate)

- Rapid growth with an average annual increase of 47.2%.
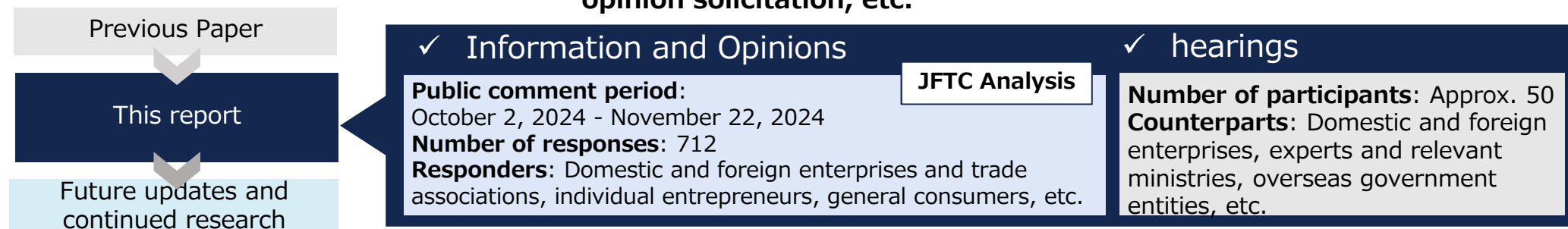- Although the market itself is in its infancy, it is expected to expand and grow further.

* Prepared by Fair Trade Commission based on the Japan Electronics and Information Technology Industries Association, "Survey on Trends in Focus Areas 2023," 2023, p. 1.

Potential Risks

- Concerns about infringement of Intellectual Property Rights, including copyrights, and the risk of social disruption due to false or misinformation.
- **Potential risks from a competition policy perspective**, etc.

The Japan Fair Trade Commission (JFTC) launched **a market study to understand the actual conditions of generative AI markets** in Japan from the **viewpoint of maintaining a fair and free competition environment** and ensuring sustainable progress of generative AI to **generate further innovation, as well as for generative AI to integrate in the economy and society in a sound manner.** In light of the **current state of flux in generative AI markets,** the study will proceed **in a more agile and flexible manner** compared to those in the past.

In October 2024, the JFTC published **a discussion paper titled "Generative AI and Competition"** (previous paper) to solicit information and opinions from a wide range of interested parties.

2. Release of the "Report Regarding Generative AI ver. 1.0" (this report) based on the results of information and opinion solicitation, etc.

Previous Paper

This report

Future updates and continued research

✓ Information and Opinions

JFTC Analysis

Public comment period: October 2, 2024 - November 22, 2024
Number of responses: 712
Responders: Domestic and foreign enterprises and trade associations, individual entrepreneurs, general consumers, etc.

✓ hearings

Number of participants: Approx. 50
Counterparts: Domestic and foreign enterprises, experts and relevant ministries, overseas government entities, etc.
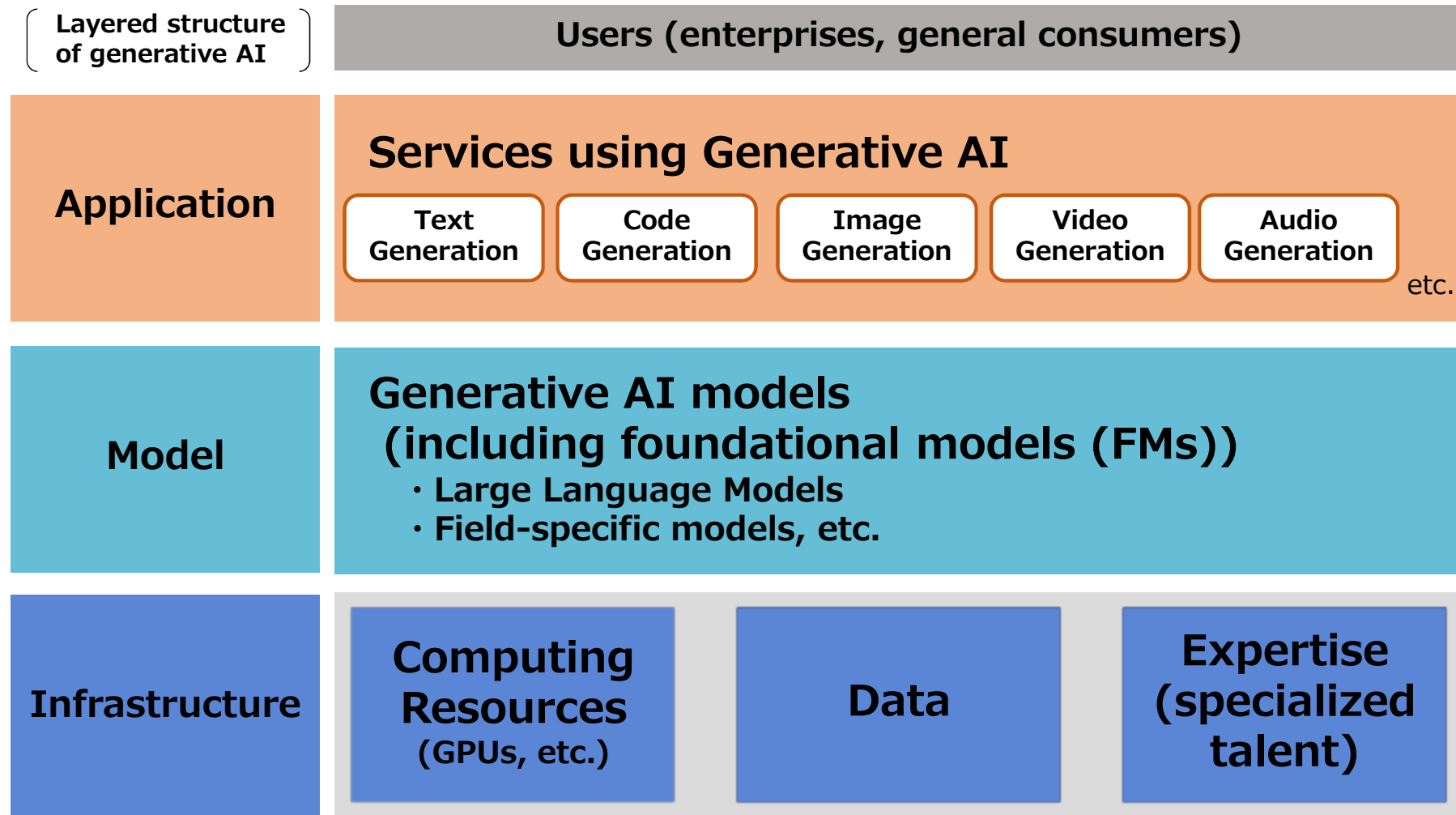
The JFTC updated the previous paper in light of rapidly moving market conditions, compiled into the **"Report Regarding Generative AI ver. 1.0" (this report (*))** with the intent to **continue the study and further update findings in the future.**

(*) Since this report is not final and is published as a current version, it is marked as "ver. 1.0" in the title.

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✓ The JFTC has organized the current structure of generative AI sector into three market layers

Layered structure of generative AI	Users (enterprises, general consumers)
Application	**Services using Generative AI** Text Generation · Code Generation · Image Generation · Video Generation · Audio Generation　etc.
Model	**Generative AI models (including foundational models (FMs))** ・Large Language Models ・Field-specific models, etc.
Infrastructure	**Computing Resources (GPUs, etc.)** ・ **Data** ・ **Expertise (specialized talent)**

✓ Overview of current generative AI-related markets

- The use of generative AI is expanding rapidly, with the implementation of generative AI advancing. However, the market for generative AI is considered to be in its infancy, and competition for the development of generative AI models, etc., is still active.

- However, the conditions of the competition are such that competition is centered on big tech companies with a financial advantage, etc., and with few comments indicating specific actions as concerns regarding competition. On the other hand, there were a certain number of comments indicating concerns of competition in the future market.

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1 Infrastructure Layer

(1) Computing resources (GPU, etc.)

◆ A sufficient quantity of semiconductor chips is essential to develop a generative AI model.

◆ NVIDIA GPUs have approximately 80% share of the global GPU market due to their high performance and rich development environment, including CUDA. In addition, the availability of these GPUs is changing due to increased supply and other factors.

> **Training phase** : Mostly NVIDIA GPUs with excellent parallel processing powers are used to efficiently process huge amounts of calculations.
>
> **Inference phase** : Competition is more active than in the training phase, with the development of various semiconductor chips that support low power consumption and high-speed processing, and the entry of startups and other companies.

(2) Data

◆ In the development of generative AI, the demand for data varies depending on the situation and usage. Quality is also important in some cases.

> **General-purpose type** : A large amount of data is required.
> **Specialized type** : Emphasis is placed on high quality data for usage.

◆ While there are various types of data, recent concerns about the depletion of open data on the Web have prompted the use of synthetic data and improvement of data quality.

◆ Regarding the existence of a competitive advantage due to the uneven distribution of learning data, some have pointed out that big tech firms have an advantage, while others have pointed out that their advantage is limited.

◆ In Japan, the development of Japanese-language-specific models is attracting attention from the standpoint of differentiation from big tech companies, and securing high-quality Japanese-language data is becoming more important.

(3) Expertise (specialized talent)

◆ With the development of generative AI, the demand for highly specialized human resources is rapidly increasing. Big tech companies have an advantage in terms of financial strength and computational resources, etc., but there is also a certain degree of liquidity for highly specialized personnel, such as moving to startup companies, etc.

◆ On the other hand, domestic enterprises face challenges in terms of competitiveness particularly regarding compensation and R&D resources. There are also situations where they struggle to ensure competition in human resources. However, the possibility of taking advantage of regional strengths, such as the use of local human resources, has also been noted.

2 Model layer

◆ Since the development of large-scale general-purpose language models requires vast amounts of computational resources, data, and specialized human resources, companies with abundant capital and technological capabilities are considered to have an advantage. On the other hand, domestic companies and startups are using basic models provided by other companies to differentiate themselves by enhancing Japanese language performance and specializing in specific usage, such as medical and financial services.

◆ DeepSeek's model in China has had a significant impact on the U.S. stock market and other markets, despite reported concerns about its safety and other issues.

◆ With the mainstream evolving toward multimodal AI that integrates and processes different types of data, as well as efficiency-enhancing technologies such as distillation and Mixture of Experts (MoE), the structure of competition could change significantly, depending on future technological innovation(s).

3 Application Layer

◆ At the application layer, competition is intensifying as a diverse range of enterprises enter the market. Functional integration with existing digital services and the emergence of AI agents will drive their use both domestically and internationally.

4 Other issues and considerations that transcend layers

◆ **Cloud services:** Although there are indications that the demand for GPU servers and other devices is increasing due to the growing demand for generative AI, and that there is active competition in the cloud services market, the three major cloud providers have a large share of the Japanese market for GPU clouds, and competition is centered on leading foreign enterprises.

◆ **Switching/transition of development environment, etc.:** In the development of generative AI models, it is pointed out that changing hardware and cloud environments is not an easy task because of the significant costs and human resource time involved. Others have pointed out that switching can be done easily.

◆ **Open source ／ closed source:** It is difficult to say whether open or closed source is preferable from a competition policy perspective, but it is important to ensure a variety of options.

◆ **Partnerships:** partnerships among enterprises are active in generative AI markets, particularly between big tech companies and startups. While there are some indications that partnerships have the potential to increase competition, there are also indications that they may weaken competition.

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✓ Among the issues raised in the previous paper through the collection of information and opinions, including hearings with enterprises, the JFTC has summarized its views on "access restrictions/exclusion of competitors" and "tying," which raised particular concerns under the Antimonopoly Act. The paper also outlines how these concepts are interpreted under the Antimonopoly Act, considering the competitive landscape in generative AI markets.

1 Access restrictions and exclusion of competitors

(Example – Opinion on Restricting Access to Semiconductor Chips)

No comments were received at this time indicating specific actions to restrict access to semiconductor chips.

◆ "We have an incentive to provide our semiconductors to a wide range of companies. For example, if we provide our semiconductors to only a small number of companies and restrict access to our semiconductors from other companies, it would mean the end of our company if those few companies cut off business with us, so there is no advantage for us in restricting such access. The best scenario for us is a system that allows everyone to enjoy the benefits of access to semiconductors." [Overseas semiconductor enterprise]

(Example – Opinion on mobile OS access restrictions)

◆ "In order for a generative AI model to function on a device, it requires access to specific software within the mobile operating system (OS). If third-party generative AI model developers are unable to access this software, they will need to take individual action, which will be costly. There are many other concerns regarding the challenges of running AI models on devices. These restrictions will ultimately prevent users, device manufacturers and AI model developers from making meaningful choices when running generative AI models on devices. They will also prevent model developers from accessing critical digital infrastructure, data and other resources on a non-discriminatory basis, putting them at a competitive disadvantage." [Foreign enterprise]

(Opinion in response to the above opinion)

◆ "We provide specific non-OS software to support our on-device generated AI model, and this software is distributed only to devices intended to provide our on-device generated AI model. However, this does not imply that it is difficult to run third-party on-device generated AI models. In fact, third-party on-device generated AI models can function on devices without specific software by using frameworks and other tools. This is evidenced by the fact that OEMs and app developers are releasing their own on-device models that can be integrated with terminals without relying on specific software." [Overseas model developer]

《 Antitrust Law Approach 》

• In general, when an enterprise that has established a strong position in the market for computing resources (GPUs, etc.), data, specialized human resources, etc., restricts access through the aforementioned acts, it becomes difficult for new entrants and existing competitors to secure alternative suppliers, which raises the costs of business activities and undermines the motivation to enter the market or develop new products, etc. When there is a risk of creating a situation in which new entrants or existing competitors are excluded or their business opportunities are reduced (market foreclosure effect), this may become an issue under the Antimonopoly Act (private monopolization, unfair trade practice(s) (General Designation 14 (Interference with a competitor's transactions)), etc.).

2 Tying

(Opinions on integration of existing digital services with generative AI products)

◆ "Company A, a competitor with a leading position in the digital services market, integrates its generative AI products into its existing digital service offerings and sells them as a bundle. Since these digital services already hold a dominant position among business customers, such tying practices are expected to give Company A a significant distribution advantage in the generative AI services market, making it difficult for competing generative AI providers to enter or expand." [Overseas model development enterprise]

◆ "Our company plans to sell generative AI products in the future, but some existing providers are integrating them with their digital services. This integration, including application compatibility and security, may make it difficult for users to switch to later entrants. We see this as a future challenge." [Domestic model development enterprise]

(Opinion in response to the above opinion)

◆ "It is perfectly natural to offer one's own products on one's own services, and because of the development and maintenance costs involved in making them compatible with other platforms and services of other companies, tying one's own products together is inevitable, and it seems important that another option exists on that service or platform." [Domestic model development enterprise]

◆ "The generative AI functionality that we have integrated into our existing in-house SaaS service is an extension to enhance that service's functionality, not a separate product. Therefore, we do not believe it constitutes tying-in sales. All major commercial software and SaaS enterprises have also integrated generative AI into their solutions. Given the presence of many strong competitors in generative AI and SaaS, we view such integration as highly pro-competitive, as it meets consumer demand for advanced solutions." [Overseas model development enterprise]

◆ "Continuous enhancements to generative AI models not only enable entirely new use cases and new classes of apps to better serve customers, but also bring a new dimension of competition to existing digital services." [Overseas model development enterprise]

《 **Antitrust Law Approach** 》

• In general, if a generative AI model provider has a strong position in a specific digital service market, integrating generative AI models into that digital service and offering it to users as a new digital service may make it difficult for other generative AI model providers or new entrants seeking to offer generative AI models to secure users as customers, thereby raising the costs of business activities and discouraging new entrants and the development of new goods. When there is a risk that existing competitors or new entrants will be excluded or that their business opportunities will be reduced (market foreclosure effect), this may become an issue under the Antimonopoly Act (private monopolization, unfair trade practice(s) (General Designation 10 (tie-in sales, etc.))).

3 Other Issues

• Regarding the other issues (self-preferencing, parallel conduct using generative AI, and acquiring specialized talent via partnerships), no comments were received at this time indicating actions such as those exemplified in the previous paper.

→ **The JFTC will continue to closely monitor trends and study the market in light of these notions.**
(An official information submission portal is available on our website.)