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English - Or. English

20 May 2025

**DIRECTORATE FOR FINANCIAL AND ENTERPRISE AFFAIRS
COMPETITION COMMITTEE**

Competition in the Provision of Cloud Computing Services – Note by Korea

19 June 2025

This document reproduces a written contribution from Korea submitted for Item 6 of the 146th OECD Competition Committee meeting on 18-20 June 2025.

Antonio CAPOBIANCO
Antonio.Capobianco@oecd.org, +(33-1) 45 24 98 08

JT03566533

Korea

1. Introduction

1. Cloud service refers to the delivery of IT resources—such as servers, storage, and software—over a network by external providers, allowing users to access these resources as needed without owning or managing them directly. Key features of cloud services include on-demand availability, flexible scalability, and a pay-as-you-go pricing model based on usage and time. Cloud services are typically classified into three categories: IaaS (Infrastructure as a Service), PaaS (Platform as a Service), and SaaS (Software as a Service).

2. Cloud services, as a core infrastructure of the digital economy, have experienced continuous market growth. This trend is driven by an increasing number of companies shifting from operating their own information systems to adopting cloud-based solutions. The market expansion is also fueled by the rise of remote work due to COVID-19, the growth of online transactions, and the active development of cloud services integrating advanced technologies such as big data and generative AI.

3. Cloud services are expected to enhance efficiency in terms of transaction costs and productivity. However, due to the rapid pace of change, the high level of technological expertise required, and the market concentration of a few major players, competitive pressure may be limited.

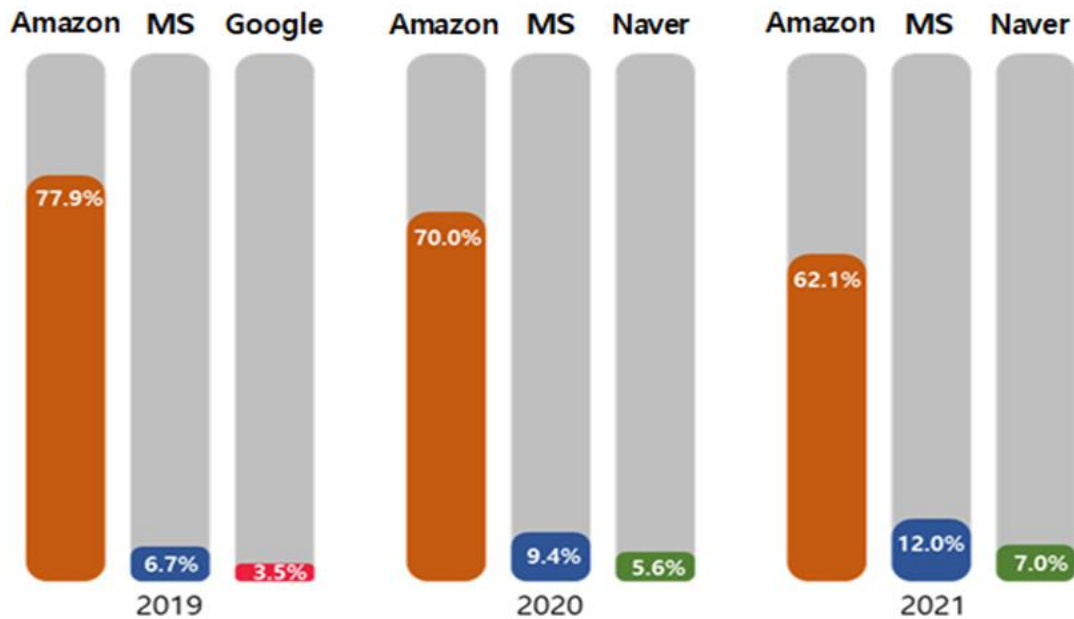
4. Therefore, in 2022, , the Korea Fair Trade Commission (hereinafter the “KFTC”) conducted the Cloud Service Market Study to analyze the transaction practices in Korea’s rapidly growing cloud service market and to examine potential anti-competitive practices. The market study was conducted in two phases:

5. First, an initial survey was carried out on 32 major cloud service providers operating in the Korean market. Then, a second survey was conducted on 3,222 companies—including 2,276 clients, 925 distribution partners, and 221 solution providers listed in marketplaces—who had business relationships with these providers, in order to comprehensively analyze transaction conditions and the competitive environment.

2. Korea’s Cloud Market Status and Transaction Structure

6. According to the market study conducted by the KFTC in 2022, from 2019 to 2021, Amazon, the leading provider, held around 70% of the Korean cloud service market (77.9% → 62.1%). The market shares of Microsoft (6.7% → 12.0%), the second-largest provider, and Google (3.5% → 6.5%) and Naver (2.8% → 7.0%), ranked third and fourth respectively, have steadily increased. These findings indicate that the market remains highly concentrated.

Figure 1. Market Share Status of the Top Three Cloud Service Providers in Korea



Note: This result is based on IaaS and PaaS sales data submitted by 16 companies among the surveyed businesses that primarily operate in the public (commercial) cloud sector.

7. Furthermore, it was found that clients tend to rely heavily on a single cloud service provider rather than using multiple providers. According to a survey of cloud service clients, 79.9% of respondent companies spent more than 60% of their total cloud-related expenses on a single provider. As for the reasons behind this dependency, respondents cited quality (42.9%), a wide range of solutions and services (40.2%), and reputation (38.6%) as the top factors, indicating that product and service differentiation plays a key role in provider selection.

8. Meanwhile, the study found that global providers such as Amazon, Microsoft, and Google tend to conduct transactions in the Korean market primarily through Managed Service Providers (MSPs), rather than engaging directly with clients. This is largely because traditional IT partners have long existed in the Korean market, and as the cloud industry has grown, these companies naturally evolved into cloud service partners. Competition among MSPs is intense, and it is not uncommon for clients to switch MSPs—while continuing to use the same cloud service—based on differences in benefits offered by each partner. According to clients who transact through MSPs, the main roles of MSPs include maintenance and incident response (72.6%), as well as service design and cost optimization (56.8%).

9. Major global providers such as Amazon, Microsoft, and Google operate "Marketplaces" that mediate the sale of cloud-related software or other solutions to clients. Through these platforms, they offer both free and paid software, and collect commissions ranging from 3% to 20% on the sale of paid software. However, the study found that only a small portion (10.3%) of Korean client companies reported having used such marketplaces.

10. Additionally, the client survey revealed that only 20.1% of respondents found it easy to predict cloud service costs. Most cited difficulties such as the complexity of pricing

system (50.3%) and the unpredictability of data transmission volume (49.5%) as major reasons for the challenge.

3. Factors Limiting Competition in the Cloud Service Market

3.1. Economies of Scale and Network Effect

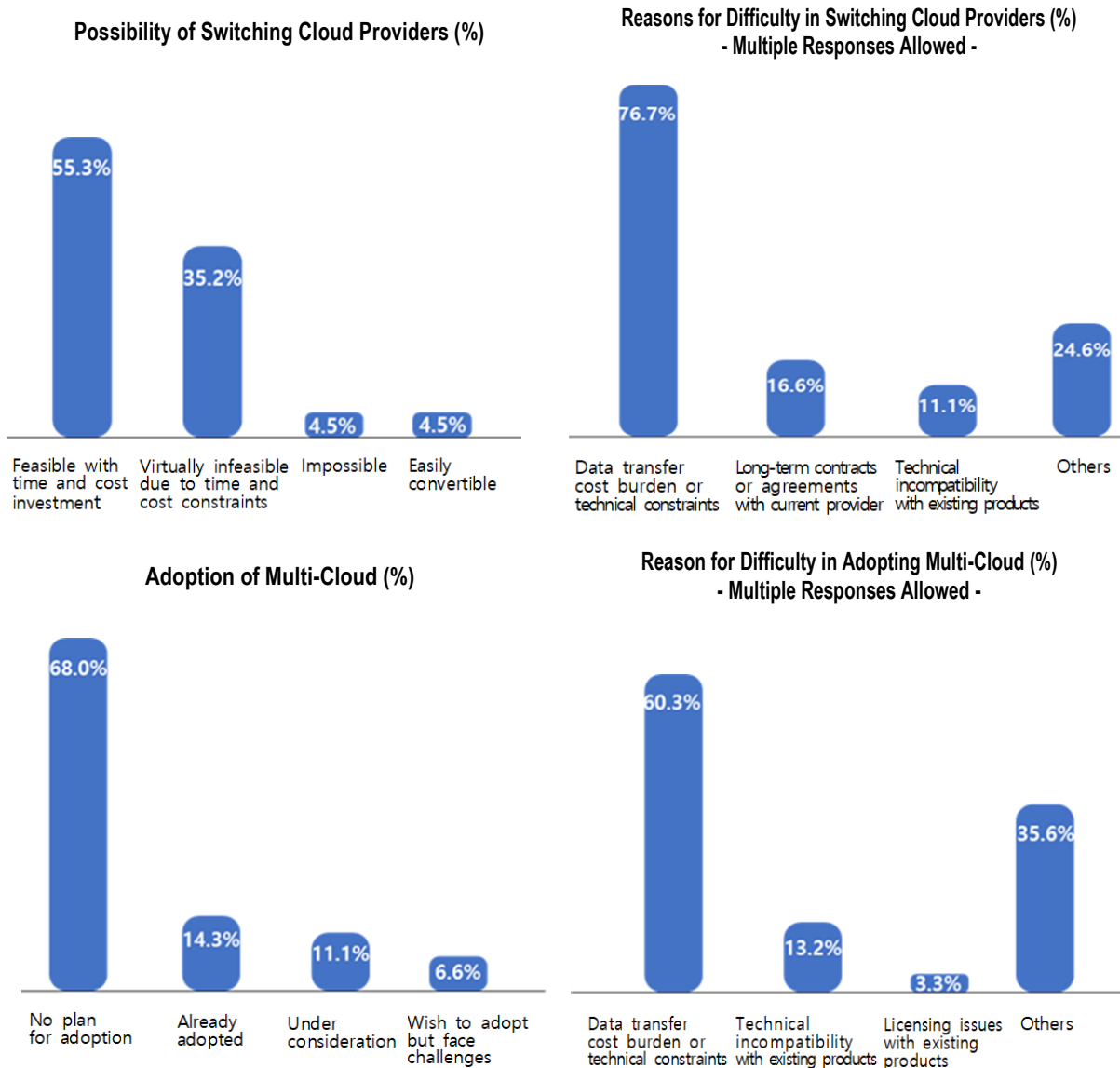
11. As the cloud service industry requires significant upfront investments in infrastructure such as data centers and R&D, it tends to exhibit strong economies of scale. In addition, powerful network effects can emerge due to the ease of interoperability among companies using the same cloud provider and the high complementarity with adjacent software. These economies of scale and network effects can make it difficult for new competitors to enter the market and may even drive existing ones out.

3.2. High Switching Cost

12. The study found that switching cloud providers often involves significant limitations due to the lack of guaranteed interoperability. As a result, redesigning or redeveloping their already established workflows is limited. This leads to high switching costs when transitioning to other providers' services, causing users to become locked in to the original provider and making it difficult to switch to competitors.

13. In fact, the KFTC's market study confirmed that it is difficult for users to freely switch to competing cloud providers or to adopt a multi-cloud service. This suggests that, even if alternative providers are available, high switching costs can lead to user lock-in.

Figure 2. Switching Cloud Providers and Adoption of Multi-Cloud



3.3. Data Transfer Issue

14. While switching costs may naturally arise due to technological limitations, they can also result from providers intentionally making data transfer more difficult in order to exclude competitors.

15. When clients attempt to switch to a competing cloud service provider, they incur costs for migrating data stored in their current cloud. According to the KFTC’s market study, it is an industry-wide practice to offer free inbound data transfers (receiving data into a provider’s cloud) while charging fees for outbound transfers (sending data to another provider) in order to attract customers. As a result, transferring large volumes of data accumulated on the existing infrastructure can require substantial time and cost, posing a significant barrier to seamless data migration.

3.4. Complexity of Pricing System

16. According to the study, cloud service fees are generally based on a pay-as-you-go model, where charges depend on CPU performance or storage capacity. In addition, volume discounts based on usage and contract-based discounts—offered when usage is pre-committed—are also available.

17. In particular, the survey found that a significant number of clients find it difficult to predict the costs related to using cloud services due to complex pricing structures, which are often unilaterally determined by the providers.

18. Under this pricing structure, cloud service providers may have incentives to adopt pricing policies that make their services more complex, making it difficult for clients to compare prices and weakening competition. A complicated pricing structure can also help conceal additional costs, which may make it easier to attract new clients to the cloud market in the early stages.

3.5. Reputation

19. When there is significant uncertainty regarding service quality, functionality, and interoperability, a provider's reputation becomes a critical factor. Especially with high switching costs, customers face difficulty in revising their initial decisions, making that first choice extremely important. As a result, customers tend to rely heavily on the provider's reputation. A low market share may signal low reputation to customers, which in turn can reinforce the dominance of market-leading firms.

4. Possibility of Unfair Practices in the Cloud Service Market and Policy Focus

4.1. Tie-in Sales

20. Cloud service providers may attempt tie-in sales of adjacent products in order to extend their dominance in the primary market to closely related markets with strong complementarities, such as specific cloud services or software. Accordingly, continued attention and monitoring are necessary to address potential anti-competitive practices based on software licensing or environments where customers are essentially dependent on the provider's technical support services.

4.2. Bundling

21. Cloud computing services are often used together with complementary software rather than on its own products. Many consumers adopt cloud services to more conveniently use specific software, such as Microsoft Office or Oracle's database management systems. In this context, when integrated cloud service providers bundle complementary software with cloud infrastructure services for the purpose of excluding efficient competitors, it may raise concerns about restricting competition and needs to be closely monitored.

4.3. Exclusive Dealing

22. Exclusive dealing may arise when a cloud service provider abuses or extends its market dominance to exclude competitors, including partner companies or solution providers offering complementary services. In the context of cloud services, this could

involve the provider announcing an exclusive agreement in advance to purchase specific software, with the aim of protecting its own cloud offerings. Consequently, clients would be required to purchase that particular software in order to access the cloud service.

23. Exclusive dealing, by its nature, can promote competition among brands, which may lead to a conclusion that it does not violate competition law under the rule of reason. However, if significant lock-in effects have already occurred, the anti-competitiveness may be assessed as relatively high, especially when such exclusive conditions are introduced in the secondary or post-market.

4.4. Self-preferencing

24. As cloud services and adjacent functions are highly complementary, cloud service providers may establish technological, legal, or economic linkages between cloud infrastructure services and other software products, potentially making it difficult or even impossible to use the cloud without the connected services.

25. For example, a provider may optimize certain software to run efficiently on its own cloud infrastructure, while making it slower or less efficient on competing cloud services. They may require competitors to obtain additional licenses to use the software.

4.5. Unfavorable Transaction Conditions Imposed on Clients

26. While most cloud service providers operating in Korea primarily contract with small-sized clients based on standard terms and conditions, they tend to add special provisions or adjust the terms of the transaction through negotiations when dealing with larger clients. This may lead to providers imposing unfavorable terms on clients by leveraging differences in bargaining power, which requires attention.

27. In particular, due to the complex pricing structure in the Korean cloud market, clients may face difficulties in selecting the most suitable products and partners, and there is a risk that unfavorable transaction terms, including additional costs, could be established.

5. Conclusion

28. Cloud services serve as a core platform with the potential to impact the entire industry, making the establishment of a fair competitive environment particularly important. According to a market study conducted by the KFTC, the cloud market is largely dominated by major global players such as Amazon. The study also found that competition in the market tends to be easily restricted due to factors such as technological incompatibility and data concentration.

29. Particularly, creating an environment where data can be seamlessly transferred and remain compatible is essential to promoting competition in the cloud service market. Major competition authorities in other countries have either completed or are in the process of pursuing legislation to ensure data portability and interoperability. The KFTC plans to reference these legislative processes and their effects to identify effective measures that will strengthen competitive pressures in the Korean market. Additionally, the KFTC will continue to monitor practices that could limit competition or harm the interests of domestic clients in the cloud service market.