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Korean Consumer Perception on Network Usage Fee Dispute:

Network Analysis of YouTube Comments

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Introduction

Owing to the development of content providers (CPs), such as YouTube, Netflix, and Twitch, internet traffic volume has grown significantly (Laterman et al, 2017). To ensure stable internet services for individual consumers, internet service providers (ISPs) must continually invest in server infrastructure to manage growing traffic (Church et al, 2008). Consequently, ISPs worldwide face escalating server management costs, leading to increasing conflicts between American CP companies and European ISPs (Byun & Do, 2022). As a result, ISPs are demanding that CPs pay differential network usage fees based on actual usage, which has led to disputes with CPs (Oh & Koh, 2018). Global CPs are refusing to pay network usage fees, arguing that they violate the concept of 'network neutrality,' which stipulates that the internet should be used to connect networks without discrimination (Wu, 2003; Oh & Koh, 2018). In contrast, ISPs argue that server maintenance costs have risen significantly due to the increased quality and capacity of content (Laterman et al, 2017; Oh & Koh, 2018).

Particularly in Korea, this ongoing dispute has led to serious consumer issues, such as certain CPs providing limited services exclusively to Korean consumers and even considering market withdrawal (The Korea Times, 2022). For example, some CPs demonstrated discriminatory treatment toward Korean consumers by restricting video quality to 720p and terminating video on demand (VOD) services (Korea JoongAng Daily, 2023). These corporate disputes result in deteriorating service quality for consumers. Therefore, the main purpose of this study is to examine the perceptions of Korean consumers experiencing the side effects of this conflict in order to identify potential solutions.

Method

In this study, a network analysis method is used to identify common and differentiated discussions about network usage fees among Korean consumers regarding CPs and ISPs. Network analysis enables the identification of key themes and framing patterns in texts by examining the relationships between words (Lee et al, 2020). The research process for this study is summarized in Figure 1.

First, comment data from related news articles were collected to analyze consumer perceptions of the network usage fee dispute. The comment data were collected from major Korean YouTube news channels using the Python Selenium package, resulting in a total of 7,615 comments. To enhance the accuracy of results, unnecessary words such as symbols, off-topic words, and slang were excluded. Additionally, keywords referring to CP companies (such as YouTube, Netflix, Twitch) were consolidated into 'CP,' while keywords for Korean ISP companies (such as KT, SK, LGU+) were combined into 'ISP'.

Moreover, a 2-mode network analysis was conducted to examine which keywords are linked similarly and differently between CPs and ISPs (Borgatti & Everett, 1997). Finally, the Gephi visualization tool was used to display the connections between the main keywords in a figure.

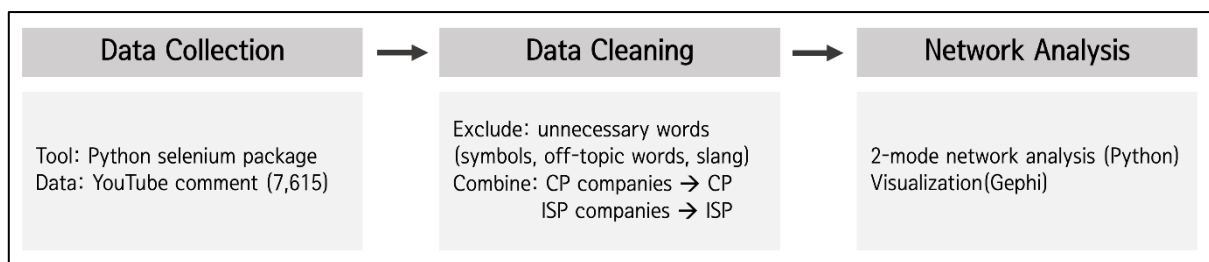


Figure 1. *Research Process*

Result

The shared and unique keywords of CPs and ISPs are shown in Figure 2. Keywords commonly linked indicate issues discussed in both CPs and ISPs. For example, keywords such as 'major company,' 'monopoly/oligopoly,' 'consumer,' 'fee,' and 'burden' imply that

innocent consumers are bearing the burden of the dispute between major companies.

Additionally, consumers mention that unsuitable internet network quality is the main cause of the dispute. Consequently, keywords like 'demand,' 'traffic,' 'internet,' 'server,' and 'connection' are also commonly connected.

Keywords linked exclusively to CPs reveal consumer perceptions about CPs in the context of the dispute. Unique keywords connected with CPs, such as 'block,' 'buffering,' 'low-quality video,' and 'access,' indicate consumer concerns about service restrictions. Keywords like 'actors,' 'creators,' 'copyrights,' 'funds,' and 'budget' demonstrate consumer concerns about the industry and its employees. In addition, justifications for the network usage fee payments were mentioned. For instance, keywords related to CPs' trial loss, such as 'lose a suit,' 'judgment,' and 'full amount,' were identified. Moreover, keywords like 'Kakao,' 'Amazon' and 'Apple (TV)' — companies that have already paid network usage fees — were also derived. Lastly, some keywords, such as 'boycott,' 'cancel,' and 'Korean platform,' indicate churn intentions.

In contrast, according to the keywords connected uniquely to ISPs, there are opinions suggesting that ISPs are demanding a fair price for network usage as well as criticism that their motivations are solely profit-driven. For example, keywords such as 'free riders,' 'charity,' 'unfair,' and 'tier' show that ISPs have the right to demand network usage fees. Moreover, keywords like 'business profits,' 'duplicate payments,' and 'income' support the claim that ISPs are exploiting network usage fees to generate profits.

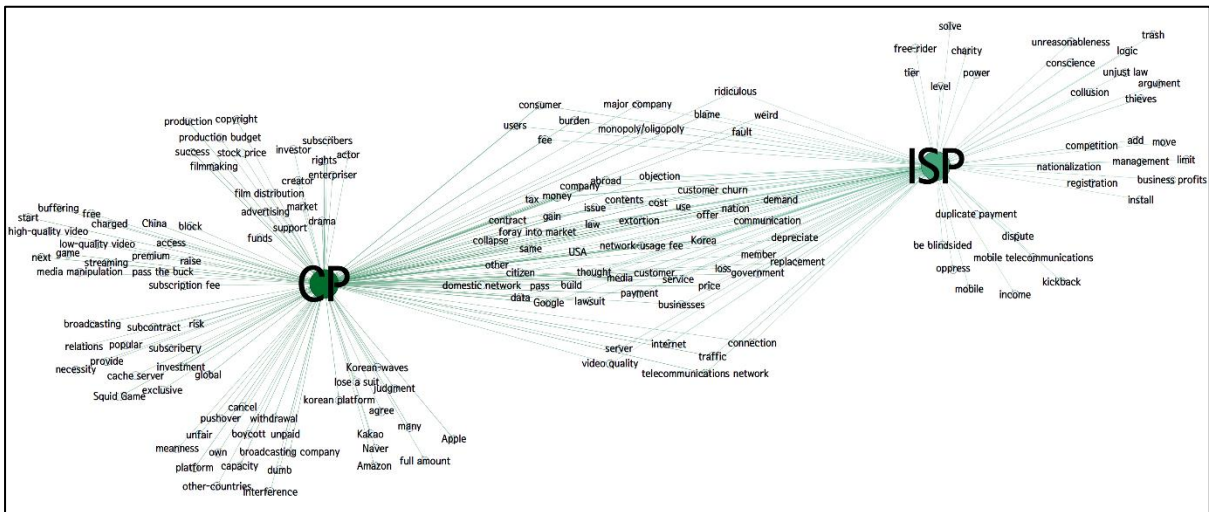


Figure 2. Result of network analysis

Conclusion

In this study, we conducted a network analysis to examine how consumers perceive ISPs and CP companies in the dispute over network usage fees. The results show that the dispute between major companies ultimately burdens innocent consumers, and the limitation of internet quality is a shared problem. Furthermore, consumers express various opinions about both ISPs and CPs.

The unique words connected exclusively to CPs reveal concerns about the side-effects consumers might experience while using CP services due to the dispute. Additionally, objections to CPs and customer churn intentions were captured in the results. Finally, for ISPs, the results show that consumers perceive ISPs as attempting to profit by demanding network usage fees. In contrast, others justify demanding such fees by claiming that not paying them is tantamount to being a free-rider.

Amid ongoing disputes and mediation over network usage fees worldwide (Byun & Do, 2022), this study's findings provide implications for consumer perceptions. Through these results, we explored the opinions of Korean consumers who experience burdens due to disputes between global CP and ISP companies. Therefore, each country's government needs to coordinate disputes to prevent serious consumer issues. Also, companies might consider

the impact on consumers during disputes to prevent large-scale customer churn. This study sheds light on the consumer aspect of the network fee dispute and suggests the need to devise an appropriate solution by examining the derived concerns and demands.

Reference

- Borgatti, S. P., & Everett, M. G. (1997). Network analysis of 2-mode data. *Social networks*, 19(3), 243-269.
- Byun, S., & Do, J. (2022). A study on the improvement of the network fee system under network neutrality. *The Journal of the Institute of Internet, Broadcasting and Communication*, 22(3), 151–161.
- Church, K., Greenberg, A. G., & Hamilton, J. R. (2008). On Delivering Embarrassingly Distributed Cloud Services. *In HotNets* (pp. 55–60).
- Korea JoongAng Daily (2023, January). “Twitch to be switched off in Korea for VOD from Feb.7”, <https://koreajoongangdaily.joins.com/2023/01/30/business/industry/Twitch/20230130190544807.html>.
- Laterman, M., Arlitt, M., & Williamson, C. (2017). A campus-level view of Netflix and Twitch: Characterization and performance implications. *In 2017 International Symposium on Performance Evaluation of Computer and Telecommunication Systems (SPECTS)*. (pp. 1–8). IEEE.
- Lee, Y. L., Jung, M., Nathan, R. J., & Chung, J. E. (2020). Cross-national study on the perception of the Korean wave and cultural hybridity in Indonesia and Malaysia using discourse on social media. *Sustainability*, 12(15), 6072.
- Oh, W.H., & Koh, H. S. (2018). Personal User Subjectivity on Net Neutrality by Q-methodology. *Information Society & Media*, 19(2), 191–222.
- The Korea Times. (2022, November). “Amazon-owned Twitch threatens to leave Korea due to regulations”, https://www.koreatimes.co.kr/www/tech/2023/04/129_339611.html.
- Wu, T. (2003). Network neutrality, broadband discrimination. *J. on Telecomm. & High Tech. L.*, 2, 141.