What Attitude Did the Japanese News Media Take toward the 2020 Tokyo Olympic Games?

Sentiment Analysis of the Japanese Newspapers

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Abstract

Under the pandemic situation, there was a fierce debate about holding the Olympic Games. This paper examines using text analysis what attitude the Japanese news media took toward the 2020 Tokyo Olympic Games. It explores whether there is a difference in tones among the Japanese major newspaper articles. The newspapers analyzed here are the morning editions of Asahi Shimbun, Mainichi Shimbun, and Yomiuri Shimbun, three top-selling newspapers in Japan. This study utilizes sentiment analysis and the list of semantic orientations of words to capture the attitudes of the newspapers toward the game. It found that liberal papers regarded as negative to holding the Olympics do not consistently show negative attitudes toward the game. There was a clear difference in attitudes among newspapers only in sports articles after the Olympics began. This article is among the first research on the relationship between the Japanese news media and the 2020 Tokyo Olympics.

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1. Introduction

This paper examines using text analysis what attitude the Japanese news media took toward the 2020 Tokyo Olympic Games. Under the pandemic situation, many Japanese people were concerned about the game because it would cause the virus to spread all over Japan. Each news media has its own opinion about this issue. It is said that conservative media usually agreed for the Olympics, the liberal ones did against it. However, liberal media groups broadcasted and sponsored it. Then, they may not be so negative toward the game.

Some previous studies have explored the relationship between the media and the Olympics using statistical methods. Tuggle et al. (2002) examine NBC's coverage of the 2000 Sydney Olympics, especially looking at the coverage of women's athletics. They argue with manually coded data that women who participate in individual sports are more likely to receive media coverage. Still, if these sports involve hard body contact, they are less likely to do so. Zaharopoulos (2007) analyzes the framing of the 2004 Athens Olympic Games utilizing content analysis. It reports that the New York Times focused on security and readiness issues from one year before to 1 day after the Olympics. Bu and Yong (2012) explore the weather effects on four U.S. newspaper coverage of the 2008 Beijing Olympics using content analysis. They show that air pollution and temperature

were associated with negative words in the news.

Ritchie et al. (2010) examine the media influence on the residents' support of the London 2012 Olympics in Weymouth and Portland in England. They report that whether the media described the game as positive or negative did not affect the residents' support of the Olympics. On the other hand, how fair the media depicted the game influenced their support for it. Dawson et al. (2013) analyze the impact of the number of medals at the Beijing Olympics of August 2008 on British peoples' support for the 2012 London Olympics using survey data. Their analysis shows the number of winning medals is positively correlated with the support for the London Olympics.

Kim et al. (2015) study the media stance toward the 2018 Pyeongchang Olympics and its successful bid with manually coded news articles. They show that positive, nationwide articles appeared in the media more often during the successful bid than the past two unsuccessful bids. Yoon and Chung (2018) examine the news media's partisanship effect on the 2018 Pyeongchang Olympics with semantic network analysis. Korean conservative media tended to frame the event negatively and often depicted it as 'Pyongyang Olympics,' not Pyeongchang, due to such a peaceful mood to North Korea. Their study explores whether or not this tendency could affect the citizens' support for the game. It finds that conservative media was not able to persuade the citizens, although

conservative media had a larger readership.

The present paper analyses the attitudes of the major Japanese newspapers toward the Olympic game and finds that there are no different stances among the media. Still, a difference appears after the game starts only.

2. 2020 Tokyo Olympics

The 2020 Tokyo Olympics is a historically rare event due to the spreading of COVID-19. It was postponed and held one year later than it had been scheduled. But the situation is not better in 2021 than in 2020. Not more than half of Japanese people got already vaccinated¹. This level was not enough to combat COVID-19, especially the Delta variant. Many media and scholars criticize the Japanese government for hosting the game as planned.

As Yoon and Chung (2018) report, the conservative camp in Korea tended to oppose holding the game, and the liberal one tended to support it because of the problem of the Korean peninsula. On the other hand, the Japanese situation is thought to be the opposite of the Korean case. The Japanese conservatives argue for holding the Tokyo

¹ Our World in Data, <https://ourworldindata.org/grapher/covid-vaccination-doses-per-capita> (Accessed on September 17, 2021)

Olympics for economic reasons. The Japanese liberals argue against having the game to keep the pandemic under control. For example, the editorial of Asahi Shimbun, one of the major liberal newspapers, said, "[W]e cannot think it's rational to host the Olympics in the city this summer" (May 26, 2021)². But the Asahi group, including the newspaper, was one of the sponsors of the Olympics. It would face a dilemma between its ethical and economic position. Then this study examines using text analysis what attitude the Japanese News Media took toward the 2020 Tokyo Olympic Games.

3. Methods

This paper examines whether there is a difference in tone toward the Olympics among major Japanese newspaper articles. The newspapers analyzed here are the morning editions of Asahi Shimbun, Mainichi Shimbun, and Yomiuri Shimbun, three top-selling newspapers in Japan. We detect positive and negative tones in the newspaper articles that refer to the Olympics at least once from January 1 to August 9, 2021. We categorize articles as "sports articles" if they feature the Olympic games and athletes or "non-sports articles" if they only mention but do not feature the games and athletes. That is because if any difference exists, it should be more apparent in the sports articles. The total number

² <https://database.asahi.com/index.shtml> (Accessed on September 15, 2021)

of articles is 11808. Table 1 is the descriptive statistics of the articles.

Table 1: Descriptive Statistics of News Articles

	Asahi	Mainichi	Yomiuri	Total
# of Sports articles	1329	1624	2227	5180
# of Non-sports articles	2248	2139	2241	6628
Total	3577	3767	4468	11808

This study utilizes the list of semantic orientations of words to assign a sentiment score to each article (Takamura et al., 2005). This list gives a sentiment score to each Japanese 55000 morphemes from -1 to +1. A lower value means negative sentiment, and a higher value does positive sentiment. For example, "優れる" (superior) and "良い" (good) are the most positive word. On the other hand, "悪い" (bad) and "死ぬ" (die) are the most negative word. This list is permitted for commercial use, very popular among Japanese scholars, and used for sentiment analysis of newspapers (Maeda et al., 2012).

The way to calculate sentiment score is 1) categorize sentences in each article into each word class utilizing MeCab, open-source software for morpheme analysis (Kudo, 2013), and 2) calculate sentiment score of each article using the list of semantic orientations of words based on the equation below.

$$S_d = \frac{1}{|W|_d} \sum_i p_i \cdot w_{id}$$

S_d is sentiment score for each article d . $|W|_d$ is the number of words included in article d . p_i means sentiment score of word i assigned by the list of semantic orientations of words. w_{id} denotes the number of words i included in article d . In other words, we multiply the sentiment score for each word by the number of the same word in each article and divide the sum of the score by the number of words included in each article.

We compare the daily averaged sentiment scores for each newspapers' sports and non-sports articles before and after the Olympics. To do this, we divide periods into three, 1) all period from January 1 to August 9, 2021, 2) Olympic period from July 21 to August 9, 2021³ 3) non-Olympic period from January 1 to July 20, 2021. We graphically show the daily averaged sentiment scores of the articles for each period and statistically examine a difference among article genres among the newspapers and before and after the game. We conduct the Kruskal-Wallis test to confirm any difference after checking homoscedasticity with the Bartlett test and normal distributionality with the Shapiro-Wilk test (Ostertagová et al., 2014).

³ We define this period as the Olympic period though the opening ceremony was held on July 23, 2021. It is because the competitions started on July 21, 2021, before the ceremony.

4. Results

Figure 1 shows the comparison among the daily averaged sentiment scores of the sports articles in each newspaper since January 2021 (Asahi: red, Mainichi: green, Yomiuri: blue). Unexpectedly, no clear difference among the newspaper articles can be found before the opening ceremony. But clear divergences appear after the Olympics begins.

Yomiuri is consistently higher than the other lines after the opening. This means that the newspaper, the most conservative, is favorable toward the game in this period. On the other hand, Asahi and Mainichi, liberal newspapers, are not so positive toward the Olympics.

Figure 1: Daily Averaged Sentiment Scores of Sports Articles since January 2021

Figure 2 focuses on the period after the opening of the game. The figure shows that Asahi is lower than the other newspapers when the Olympics begin, as the example of the editorial above suggests. After that, Asahi and Mainichi are almost at the same levels. But immediately before the end of the game, Asahi's sentiment scores abruptly rise to the same level as Yomiuri.

Figure 2: Daily Averaged Sentiment Scores of Sports Articles after the Opening of the Olympics

Figure 3 shows the sentiment scores of the non-sports articles in each paper, respectively. This figure indicates that there is no apparent difference among the newspapers throughout the period since January.

Figure 3: Daily Averaged Sentiment Scores of Non-sports Articles since January 2021

Figure 4 focuses on the period after the opening of the game. There is no clear difference again. The sentiment scores of non-sports articles in Yomiuri are not high as sports articles. These figures suggest that only the sentiment scores in sports articles are different even after the Olympics begins.

Figure 4: Daily Averaged Sentiment Scores of Non-sports Articles after the Opening of the Olympics

Figure 5 displays the daily averaged sentiment scores of the sports articles in each newspaper since January 2021 in box plots and the result of the Kruskal-Wallis test. The medians for each paper are almost the same. The result of the Kruskal-Wallis test is not statistically significant, suggesting the sentiment scores for each paper are not different throughout the period since January.

Figure 5: Daily Averaged Sentiment Scores of Sports Articles since January 2021 in Box Plot

Figure 6 plots the daily averaged sentiment scores of the non-sports articles in each newspaper since January 2021 with the result of the Kruskal-Wallis test. The medians for each paper are almost the same again. But Yomiuri is a little bit higher than the other papers. The p-value is about 0.065 and not statistically significant at the conventional level.

Figure 6: Daily Averaged Sentiment Scores of Non-sports Articles since January 2021 in Box

Plot

Figure 7 plots the daily averaged sentiment scores of the sports articles in each newspaper after the Olympics starts with the result of the Kruskal-Wallis test. Yomiuri is much higher than the other papers. The test result is significant, meaning that the difference in the sentiment scores among the newspapers is confirmed.

Figure 7: Daily Averaged Sentiment Scores of Sports Articles after the Opening of the Olympics in Box Plot

Figure 8 plots the daily averaged sentiment scores of the non-sports articles in each newspaper after the Olympics starts with the test result. The test result is not statistically significant. As Figures 1 and 2 show, these tests also suggest that only the sentiment scores in sports articles differ after the opening of the Olympics.

Figure 8: Daily Averaged Sentiment Scores of Non-sports Articles after the Opening of the Olympics in Box Plot

Figure 9 plots the daily averaged sentiment scores of the sports articles in each newspaper before the Olympics with the test result. The test result is not statistically significant.

Figure 9: Daily Averaged Sentiment Scores of Sports Articles before the Opening of the Olympics in Box Plot

Figure 10 plots the daily averaged sentiment scores of the non-sports articles in each newspaper before the Olympics with the test result. The test result is not statistically significant at the conventional level. These results are similar to those since January 2021 because the period before the game accounts for a large percentage of all the observations.

Figure 10: Daily Averaged Sentiment Scores of Non-sports Articles before the Opening of the Olympics in Box Plot

5. Discussion

The results above do not find the difference in sentiment scores among the newspapers before the Olympics. Liberal papers such as Asahi Shimbun sometimes argue against the game, but their articles do not consistently show a negative tone. This tendency may point to the trade-off they faced; their attitudes toward the Olympics should be negative under the pandemic, but they were one of the game's stakeholders at the same time. Then they did not oppose the game. On the other hand, Yomiuri, a conservative paper, can express

positive attitudes toward the Olympics. However, unexpectedly, each camp did not show a clear difference in attitudes among the newspapers before the game began. A statistically significant difference emerges only in sports articles after the Olympics started. We cannot know the reason from the analysis above. Still, the results suggest that even Yomiuri cannot strongly argue for the game under this pandemic situation. Once the game started, they could do that, though only in sports articles. On the other hand, Asahi and Mainichi faced a stronger dilemma than Yomiuri. This may lead to a clear gap among the newspapers only in sports articles after the Olympics began.

6. Conclusion

This paper examines using text analysis what attitude the Japanese news media took toward the 2020 Tokyo Olympic Games. It explored whether there is a difference in tones among the Japanese major newspaper articles. The newspapers analyzed here are the morning editions of Asahi Shimbun, Mainichi Shimbun, and Yomiuri Shimbun, three top-selling newspapers in Japan. This study utilizes the list of semantic orientations of words to capture the attitudes of the newspapers toward the game. It found that liberal papers regarded as negative to holding the Olympics do not consistently show negative attitudes toward the game. There was a clear difference in attitudes among newspapers only in

sports articles after the Olympics began. This article is the first research on the relationship between the Japanese news media and the 2020 Tokyo Olympics.

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