Classifying Tourist Destinations in Japan for Overtourism

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ARTICLE INFO	ABSTRACT
	Tourism is considered an important factor that generates a feeling of satisfaction and wellbeing and contributes to subjective wellbeing and quality of life. The magnificent nature and cross-cultural understanding that tourists have never experienced bring a wider perspective to tourists. In addition, tourism development generates economic growth by increasing foreign exchange income and creating employment opportunities. The rapid growth of tourism has led to the challenge of overtourism as well as conflicts between tourists and residents over the inconvenience caused to residents and the damage caused to the cultural environment due to the cultural differences between the two groups. This phenomenon is relatively more evident at the popular tourist destinations and has aggravated as the number of tourists has grown. This research aims to define the state of overtourism at famous tourist destinations in Japan and classify the level of overtourism based on social media data, primarily from Twitter. As Kyoto is suffering from overtourism, we conduct a comparative study of four other tourist destinations with Kyoto and explore the state of overtourism based on positive and negative expressions collected during January 8 to April 18, 2020. The results show the degree of overtourism for tourism destinations can be classified by the ratio of positive and negative expressions in tweets.

1. Introduction

Tourism research focuses on wellbeing through a broad range of terms partially inspired by philosophy and psychology, such as quality of life (QOL) and life satisfaction. Tourists' experiences and activities were found to have a positive effect in a variety of domains, such as family life, social life, leisure life, and cultural life. Research reveals that tourism experiences and activities have a significant effect on both tourists' overall life satisfaction and residents' wellbeing (Uysal et al., 2016). Tourism changes our lives in a unique way by not only improving our living standard but adding to our wellbeing as well (Tuo et al., 2014).

Tourism as an industry has become a major socioeconomic force in both developing and developed countries. Its potency as a source of economic development has made it essential to the strategic planning efforts in nearly every country. Few industries transverse the entire globe to bring together many cultures in the way tourism does (Uysal et al., 2016). The tourism sector

not only increases foreign exchange income, but also creates employment opportunities, stimulates the growth of associate sectors such as hotels and retail services, and directly contributes to economic growth (Lee & Chang, 2008). In Spain, economic growth has improved due to persistent expansion of international tourism during the last three decades (Balaguer & Cantavella-Jordá, 2002). World Travel & Tourism Council (WTTC) produces reports on the economic and employment impact of Travel & Tourism in 185 countries/economies and 25 geographic or economic regions in the world (WTTC, 2022). Their annual research shows that the Travel & Tourism sector contributed 10.3% of the global GDP in 2019; this share decreased to 5.3% in 2020 due to ongoing restrictions on mobility and increased to 6.1% in 2021. Before the COVID-19 pandemic spread, the increase owed to new tourism trends such as use of travel websites, ticketing, etc. and cheaper travel using low-cost carriers, generating a new environment of interactions between tourists and residents.

This remarkable rise in tourism has fueled new interactions between tourists and residents, leading to overtourism and a feeling of rejection toward tourists over the past few years in well-known tourist attractions. For example, in Japan, crowded tourists rush into the bus station in front of Kyoto JR station, causing difficulty for local daily commuters to take the bus. The United Nations World Tourism Organization (UNWTO, 2019) defines overtourism as "the impact of tourism on a destination, or parts thereof, that excessively influences perceived quality of life of citizens and/or quality of visitors experiences in a negative way." In recent years, demonstrations opposing the development of tourism have occurred at famous tourist destinations such as Barcelona and Venice. These events have the potential to generate a new conflict between tourists and residents.

Lee (2019) proposed the Feeling Expansion Model showing that feelings expand space and time axis focusing on the specific expression with positive words involving the keyword "tourist". Lee (2020) enhanced the concept of the Feeling Expansion Model in relation to the conflict between tourists and residents. As a result, the positive actions with "collaborative" keywords could be one solution for the conflict between tourists and residents and enhance QOL. In this research, we will analyze the communication between residents and tourists at several well-known tourist attractions in Japan and classify the state of overtourism of these sites. We assume that each famous site has features that will make it increasingly popular so that the state of overtourism changes over time, and that the changing element will be important for both residents and tourists. If we can extract positive elements, then these elements would have a positive effect for residents as well as tourists.

2. Overtourism

Overtourism, which became a global issue in the summer of 2017 (Seraphin et al., 2018), causes challenges for residents around major tourist attractions to enjoy their locality because of traffic jams, degradation of landscape, congestion, and vandalism. The concentration of a large number of people at a tourist destination always leave behind pollution, littering, and other negative effects that destroy the site's amenities and freshness. Such sites include famous historical places and national parks, too. Residents' feeling of rejection toward tourist in Barcelona and its surroundings appeared in the form of assaults against restaurants, businesses, and yachts, attacks on tourist buses, damage to bikes in tourist spots, and other acts of vandalism (Martin et al., 2018). In Venice, another unique city facing overtourism, ecology, economics and culture are inextricably linked to the conflict between human and natural capital (Seraphin et al., 2018).

Extant literature offers several frameworks for the approach to solve the overtourism problem. Seraphina et al. (2018) addressed overtourism from the locals' perspective and showed that

residents as volatile groups have proven themselves as resilient in some cases. This resilience has been developed through an ambidextrous approach, which is the balance between exploitation (using a negative situation) and exploration (turning it into something positive). The study identified four archetypes of locals in regard to their attitudes toward tourists in an overtourism context: victims, peaceful activists, vandals, and resilient locals. Zmyslony et al. (2020) presented research contributing to the discussion on the sustainability of the sharing economy by adopting the Social Capital Theory to offer an expansion of the sharing economy's role and scope of relations with local communities in the context of overtourism. Their study examined the sustainability of the process of the sharing economy impacting urban tourism communities in light of Robert Putnam's approach to Social Capital Theory.

Kyoto, Japan's cultural capital and most well-known tourist destination, is already suffering from overtourism. The number of hotel constructions has increased due to the increasing influx of tourists, and the phenomenon of underground soaring has appeared. The soaring costs of living have forced local residents to commute from remote areas.   Even though the situation has not reached the stage of overtourism in other tourist destinations in Japan, the growth of the tourism industry indicates such a possibility in the near future. In this study, we will evaluate how overtourism may be appearing in typical tourist destinations in Japan.

In this research, as an extension of our previous Feeling Expansion Model (Lee, 2019), we will consider extracting the state of overtourism from emotional expressions in social media. We assume overtourism prompts negative expressions from residents, which they communicate on social media (Twitter), and we examine these from their perspective. In contrast, positive expressions may originate from both residents and tourists, and these are examined from their perspectives. Our research assumes that the situation of overtourism will be appeared in the comment of social media using positive or negative expressions.

3. Our Proposed Approach

3.1. Perspective

In this research, we consider emotional expressions in the social media, including individual happiness, and analyze the contents using natural language analysis. In particular, our aim is to extract positive and negative expressions and analyze the emotional expressions of tourists and residents in detail. We focused on extracting from these expressions the indicators of whether a particular region is transitioning to overtourism. Kyoto is suffering from overtourism, so we target four more tourist destinations, Tokyo, Nara, Kamakura, and Nikko, for our analysis to identify and compare their features with those of Kyoto. The four areas selected are known for their cultural heritage and history. In particular, the elements indicating happiness are extracted from positive expressions.

3.2. Method

We set up the extracting system using Twitter REST API interface to collect the sentences by Python program language. Figure 1 shows the overview of the data flow map of the experiments. We first extracted all words and frequencies from the tweet data over several months, and then multiple researchers extracted 100 words that seemed to be positive and negative, respectively. Tweets containing positive and negative keywords were called positive and negative tweets, respectively. We extracted unique data to eliminate multiple posts and eliminated commercial data, and then applied the syntax analysis using the Japanese dictionary and extracted related co-occurrence noun or adjective keywords for each category. Our

experiments extracted the tweets with the two co-occurring keywords. One keyword was "tourists" and the other keyword was the name of the tourist destination: Kyoto, Tokyo, Nara, Kamakura, and Nikko. We first set up the positive and negative filter using positive and negative dictionary including 100 keywords, and extracted positive and negative tweets for each destinations. The period of the experiment was January 8 to April 18, 2020. Notably, even though, the Covid-19 infection had started spreading globally, it was not yet a pandemic in Japan. Therefore, in this experiment, keywords relating to Covid-19 were removed from the negative dataset. After the extraction of the positive and negative dataset, we categorized the filter using the dictionary.
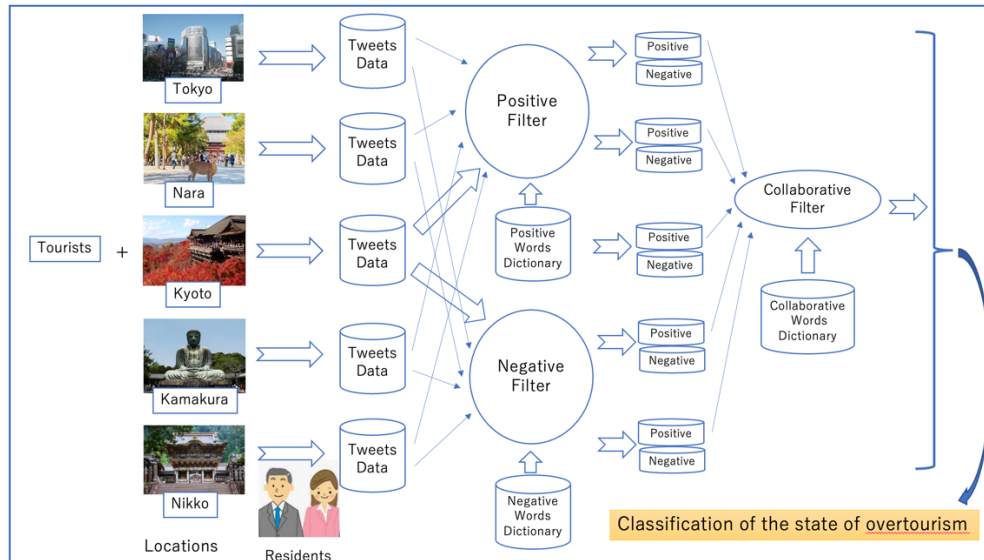

Figure 1: Feature extraction flow for five famous tourist destinations in Japan

4. Results

4.1. Features of each tourist destination

We conducted the experiments based on the co-occurrence of "tourist" and the name of the destination, such as Kyoto, Tokyo, Nara, Kamakura, and Nikko, during January 8–April 18, 2020, in a total of 17,880 tweets. Table 1 shows the total number of tweets, the number of positive tweets, and the number of negative tweets for the five different sightseeing sites. The number of positive and negative tweets counts the number of tweets that contain one or more words in the positive and negative dictionary respectively. In addition, we consider their multiple appearances in each tweet. The total number of positive or negative keywords indicates their total appearances in all tweets. The results, as presented in Table 1, have three features. First, the size of the city corresponds to the total number of tweets. Second, almost half of all tweets contain emotional, such as positive or negative, expressions. Third, positive keywords have double appearances more than negative keywords over all tweets in every sites.

Table 1.
Frequency of tweets for the five tourist destinations

	Kyoto	**Nara**	**Kamakura**	**Tokyo**	**Nikko**
Total Number of Tweets	4503	3663	3636	4313	1765
Number of Positive Tweets	1736	1262	1392	1419	721
Total Number of Positive Keywords	2504	1804	2098	1979	1103
Number of Negative Tweets	1030	801	779	810	260
Total Number of Negative Keywords	1315	956	992	1029	306

Figure 2 shows the distribution of the percentages of positive and negative tweets about each city. Due to the inclusion of the keyword "Tourism", positive tweets are about twice as frequent as negative tweets. We started off with the hypothesis that Kyoto is already a state of overtourism. Since we believe negative tweets increase in the case of overtourism, we considered it appropriate to use the ratio of negative tweets to total tweets as the indicator to overtourism. Our study yields four findings. 1) Kyoto and Kamakura can be considered to be in almost the same overtourism state. 2) If the percentage of negative tweets is 20% or more, we consider it as a state of overtourism. 3) Nikko has many positive expressions suitable for tourist destinations, and were it not for its inconvenient transportation system, it would have been close to a state of overtourism. 4) When the city is as large as Tokyo, the proportions of positive and negative tweets tend to be relatively low.

However, the following results were inconclusive: 1) The difference between the characteristics of Kyoto and Kamakura is not clear; and, 2) Nara evokes fewer positive expressions compared to what Kyoto and Kamakura do, but the latter cities are in a state of overtourism.
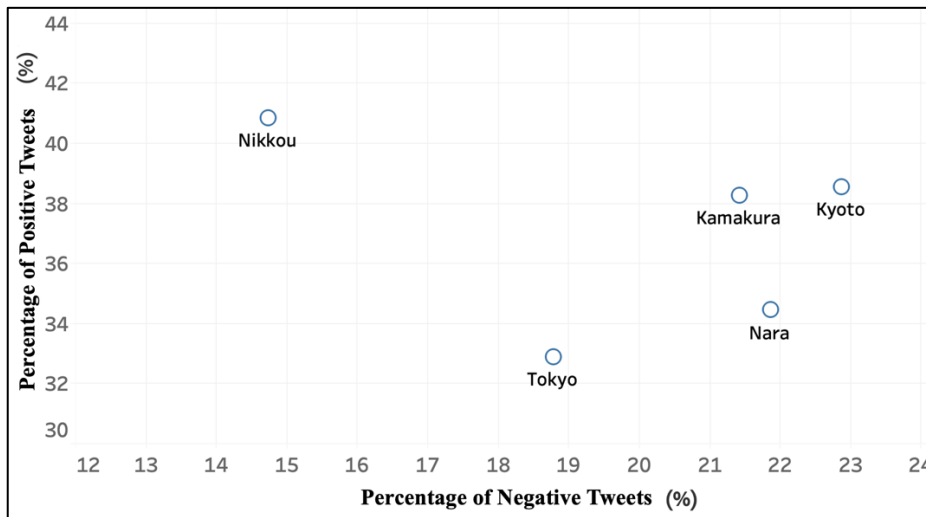

Figure 2: Distribution of the Percentages of Positive and Negative Tweets

4.2. Features of typical sites with overtourism

To solve the question mentioned before, Figure 3 shows the number of negative and positive keywords in one negative and positive tweet. In this research, we assume that the inclusion of many negative and positive expressions in one tweet represents stronger negative and positive feelings. As Figure 3 shows, Kyoto evokes stronger negative emotions than Nara, and Kamakura expresses stronger positive emotions than Kyoto.
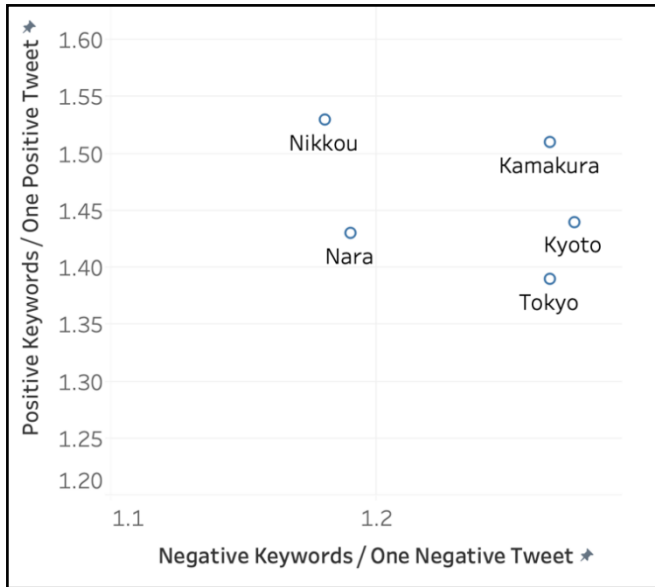
Figure 3: Distribution of Positive and Negative Keywords per a Single Positive and a Negative Tweet

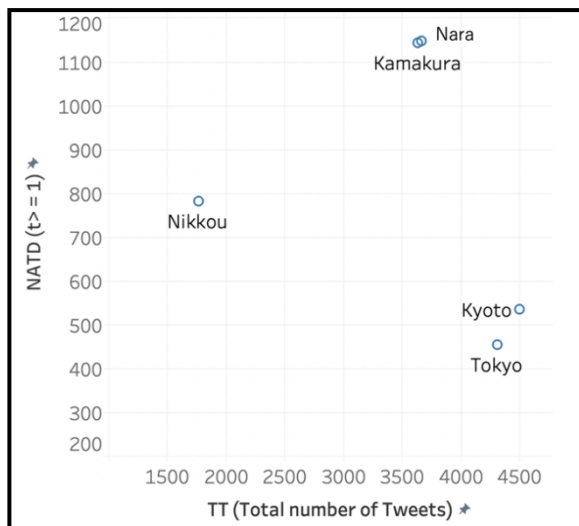## 4.3. Strength of the adjacent tourist destination

Figure 4: Features of the Strength of Adjacent Tourist Destinations

Assuming that tourist destinations is meaningful for tourists by coexisting adjacent tourist destinations, 20 famous names of adjacent tourist destinations in each tourist destination were selected to form each dictionary in five different places. We collected data to check how many times adjacent tourist destinations are appeared in each tweet, and the results are shown in Figure 4.

The horizontal axis of Figure 4 is TT, which shows the total tweets, and the vertical axis is NATD (t) (number of tweets including names of adjacent tourist destinations at t times). NATD (t>= 1) indicates the number of tweets where these names appeared more than once. The larger the value of NATD, the more the references to these destinations, indicating their attractiveness. The results in Figure 4 suggest that Kamakura has more attractive places around than Kyoto; that is, there is potential for further tourism development around Kamakura.

5. Conclusion

This research aimed to define the state of overtourism at famous tourist destinations and classify the level of overtourism based on tweets data. In Japan, Kyoto is facing overtourism. We conducted a comparative evaluation of Kyoto along with four other tourist attractions in Japan—Nara, Kamakura, Tokyo, and Nikko—and defined the state of overtourism based on positive and negative expressions in the tweets.

Our results suggest that overtourism at these five tourist destinations can be classified based on the following characteristics. 1) If we assume overtourism can be evaluated by the ratio of positive and negative tweets to total tweets, then Kyoto and Kamakura show almost the same level of overtourism due to the similar percentage distribution of positive and negative tweets. 2) We hypothesized that Kyoto is in a state of overtourism. Since negative tweets increase in a situation of overtourism, we found it appropriate to consider the ratio of negative tweets to total tweets to decide the state of overtourism—we considered that if the percentage of negative tweets was 20% or more, the situation indicated overtourism. 3) Nikko has many positive expressions suitable for tourist destinations, but tourism here is limited by a lack of adequate modes of transportation to the city. However, when compared with other regions, it still has more positive tweets than negative ones. 4) Positive and negative tweets often include emotional expressions, but tweets with the keyword "Tourism" may not necessarily include emotional expressions. Similarly, tweets containing the keyword "Tokyo" may not be classified as positive or negative. As a result, the proportions of positive and negative tweets tend to be lower for big cities such as Tokyo than for other cities. 5) Kyoto has many famous shrines and temples that attract a lot of tourist crowd, leading to overtourism. However, Nara has fewer tourist attractions than Kyoto, and these are widely dispersed, which prevents crowding. As a result, we find that Kyoto evokes more negative emotions than Nara. Similarly, Kamakura has more tourist attractions and crowding than Nara, but tourists here tend to not stay on. As a result, Kamakura too seems to evoke more positive emotions than Kyoto, suggesting that the level of overtourism is lower here than in Kyoto.

One limitation of this study is that it does not take into account the effect of Covid-19 as its time period pertains to before the pandemic arrived in Japan. Since then, however, the restrictions following the pandemic have badly hit the tourism industry worldwide. Local residents tend to oppose tourists from areas highly affected by Covid-19. This negative feeling is different from overtourism, even though it could be regarded as a conflict between residents and tourists. The topic remains one to be explored, in the context of activities that support sustainable tourism.

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