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What Japanese Tourism Amenities are Influenced in Terms of Affecting Inbound Tourist Demand?

Yoko KONISHI[#§]
Research Institute of Economy, Trade and Industry, Japan

Takashi SAITO
Ministry of Economy, Trade and Industry, Japan
Research Institute of Economy, Trade and Industry, Japan

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Abstract: *Since 2012, the number of inbound tourists to Japan has increased every year, and new records of tourism-related economic indicators are being updated. On the other hand, the sudden inbound boom has led to a concentration of travel destinations, and over-tourism has become a problem. In this paper, we first statistically observe the concentration of tourists by accommodation type for each country of origin. Second, by identifying tourism amenities that contribute to inbound demand, we gain the knowledge necessary to shift demand from facilities with a high concentration of inbound tourists to facilities with lower occupancy. For the analysis, we utilised establishment data from the Online Travel Agency 'Accommodation Travel Statistics Survey' and data on tourism resources by region. The results show that the number of rooms, average price, membership of the hotel in a chain, internet availability, room type, number of World Heritage sites, and number of direct flights positively affect inbound demand. In particular, for ryokan (Japanese-style inns) with low occupancy rates and inbound guest ratios, their independence, internet availability, Western-style room availability, number of World Heritage sites, and hot spring facilities are effective in capturing demand.*

Keywords: Tourism Amenities; Accommodation Facilities Level-data; RevPAR

JEL Classification: L84; D24; R32

[#] Corresponding author. Yoko Konishi, address: Research Institute of Economy, Trade and Industry (RIETI), 1-3-1 Kasumigaseki, Chiyoda-ku, Tokyo 100-8901 Japan. Phone: 81-3-3501-8213; Fax: 81-3-3501-8416. E-mail: konishi-yoko@rieti.go.jp

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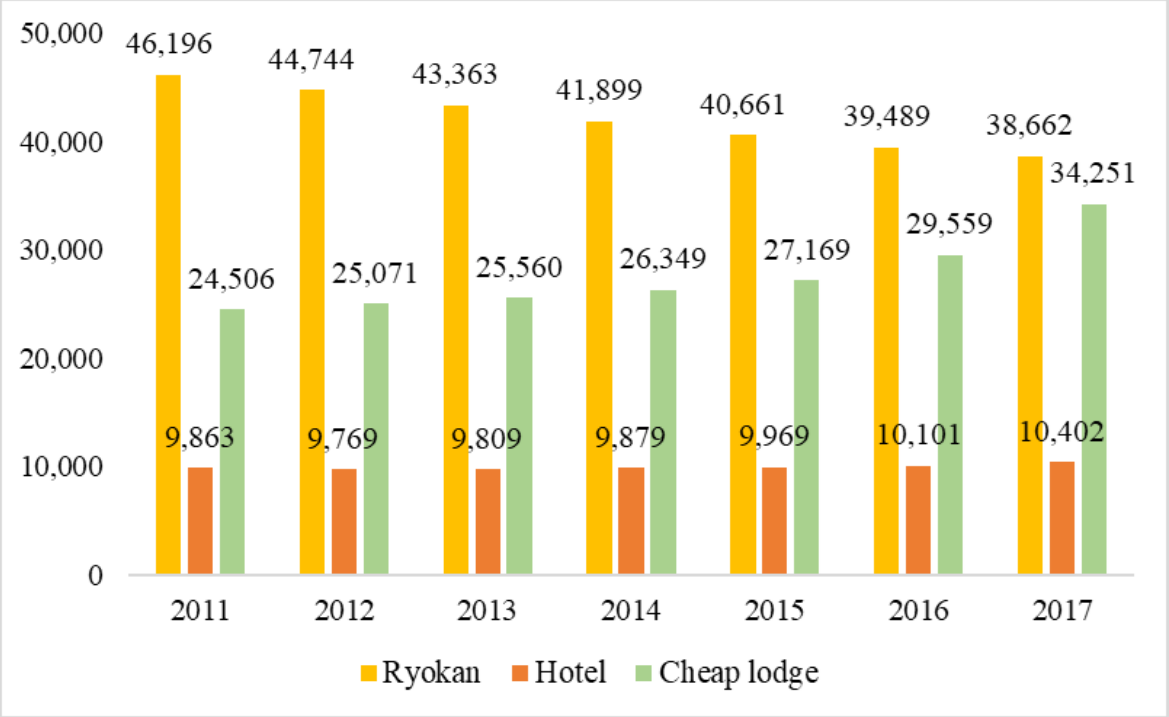
1. Introduction

Since 2012, the number of inbound tourists has increased every year and new records for tourism-related economic indicators are being updated in Japan.[1] This sudden inbound boom has led to the concentration of travel destinations and over-tourism becoming problems in various places. Two types of concentration have been discussed in Japan's inbound tourism market. The first is the concentration of tourist destinations as represented by the golden route from Tokyo to Mt. Fuji to Kyoto, Osaka, and Kobe. The second is, according to Japan National Tourism Organization (JNTO), the concentration of travelers' countries of origin, with four East Asian countries accounting for approximately 75% of inbound tourists. Some of the problems caused by these types of concentrations include congestion in Kyoto and Mt. Fuji due to popularity amongst tourists and the host region's economic decline due to the rapid decrease in tourists visiting Japan caused by bilateral relations deterioration between Japan and the Republic of Korea. We believe that simply increasing the number of tourists is not adequate for the growth of the tourism market. The sufficient diversity of countries of origin, destinations, and accommodation types will promote stable and sustainable growth of the tourism market.

Hence, in this paper, the third type of concentration—the concentration of accommodation facilities for inbound tourists—has been examined. Using the Accommodation Survey (AS) conducted by the Japan Travel Agency (JTA) to calculate the share of inbound demand captured by each facility type in 2017, we can observe that Japanese-style inns (*ryokan*) accounted for 9%, hotels for 89%, and cheap lodging houses for 2%, with an overwhelming concentration in hotels. Figure 1 shows the changes in the total number of accommodation facilities in Japan; the share of hotels of the total was approximately 12% in 2017. With the recent rapid inbound tourism boom, the demand in the accommodation industry should be increasing rapidly. However, the number of *ryokan* decreased annually during the 2011–17 period, and 7,534 inns have either consolidated or closed.

[1] Konishi (2019) provided an overview of Japan's inbound boom and a summary of various economic indicators.

Figure 1: Changes in the Number of Accommodation Facilities by Facility Type



Source: Authors' creation based on the "Examples of Health Administration Reports" from the Ministry of Health, Labour, and Welfare.

Table 1 shows the inbound tourist ratio, which is the total number of inbound tourists divided by the total number of guests, according to facility type. Before the inbound boom, the inbound traveller rate was less than 4% in all four categories except for city hotels. During the inbound boom in 2017, resort hotels, business hotels, and cheap lodging houses exceeded 10%, whereas city hotels had a high ratio of inbound tourists at 34.2%. The inbound tourist ratio of *ryokan*, conversely, has been growing but still does not exceed 10%.

Another important variable is occupancy rate (OR) by facility type, an essential management indicator for the lodging industry. According to the AS's results in 2018, the OR is 80.2% for city hotels, 75.5% for business hotels, 58.3% for resort hotels, 38.8% for *ryokan*, and 30.2% for cheap lodging houses. The ORs of *ryokan* and cheap lodging houses have remained low. The correlation between key management indicators such as the OR, revenue per available room (RevPAR), and the inbound tourist ratio will be presented in Section 2.

Table 1. Changes in the Inbound Tourist Ratio by Facility Type

Year	Ryokan	Resort hotel	Business hotel	City hotel	Cheap lodging house
2011	1.4%	3.6%	3.8%	14.0%	3.8%
2012	2.1%	4.8%	4.9%	17.3%	4.8%
2013	3.2%	6.8%	5.8%	20.7%	4.9%
2014	4.7%	8.8%	7.7%	25.4%	6.6%
2015	7.2%	12.8%	11.2%	30.7%	6.7%
2016	7.8%	13.4%	12.5%	32.2%	7.3%
2017	8.4%	14.3%	14.4%	34.2%	10.5%

Source: Authors' creation based on the Accommodation Survey from Japan Travel Agency.

Ohe and Peypoch (2016) found that the decline in *ryokan* is due to their inefficiency and used facility-level data to observe the relationship between size and efficiency and aggregated the region's overall efficiency. They pointed out the shortage of studies using facility-level data in Japan. Since then, Morikawa (2017; 2018) has been actively studying the impact of distance on lodging demand using the AS to analyse productivity by facility. We follow this idea and cover *ryokan*, hotels (i.e. resort, business, and city hotels), and cheap lodging house facilities, which have been increasing in recent years because of the increase in inbound travellers.

In this paper, we aim to statistically identify tourism amenities that contribute to inbound demand to gain the knowledge necessary to shift demand from facilities with a high concentration of inbound tourists to facilities with lower occupancy. For this analysis, we utilize establishment data from the AS, online travel agency (OTA) information, and data on tourism resources by region. This is the first time that these three datasets have been connected to conduct a nationwide study in Japan.

The results indicate that the number of rooms, average price, membership in a hotel chain, internet availability, room type, number of local World Heritage Sites, and number of direct flights positively affect inbound demand. Particularly, for *ryokan* with low ORs and inbound guest ratios, their independence, internet availability, Western-style room availability, number of World Heritage Sites, and hot spring facilities are effective in capturing demand.

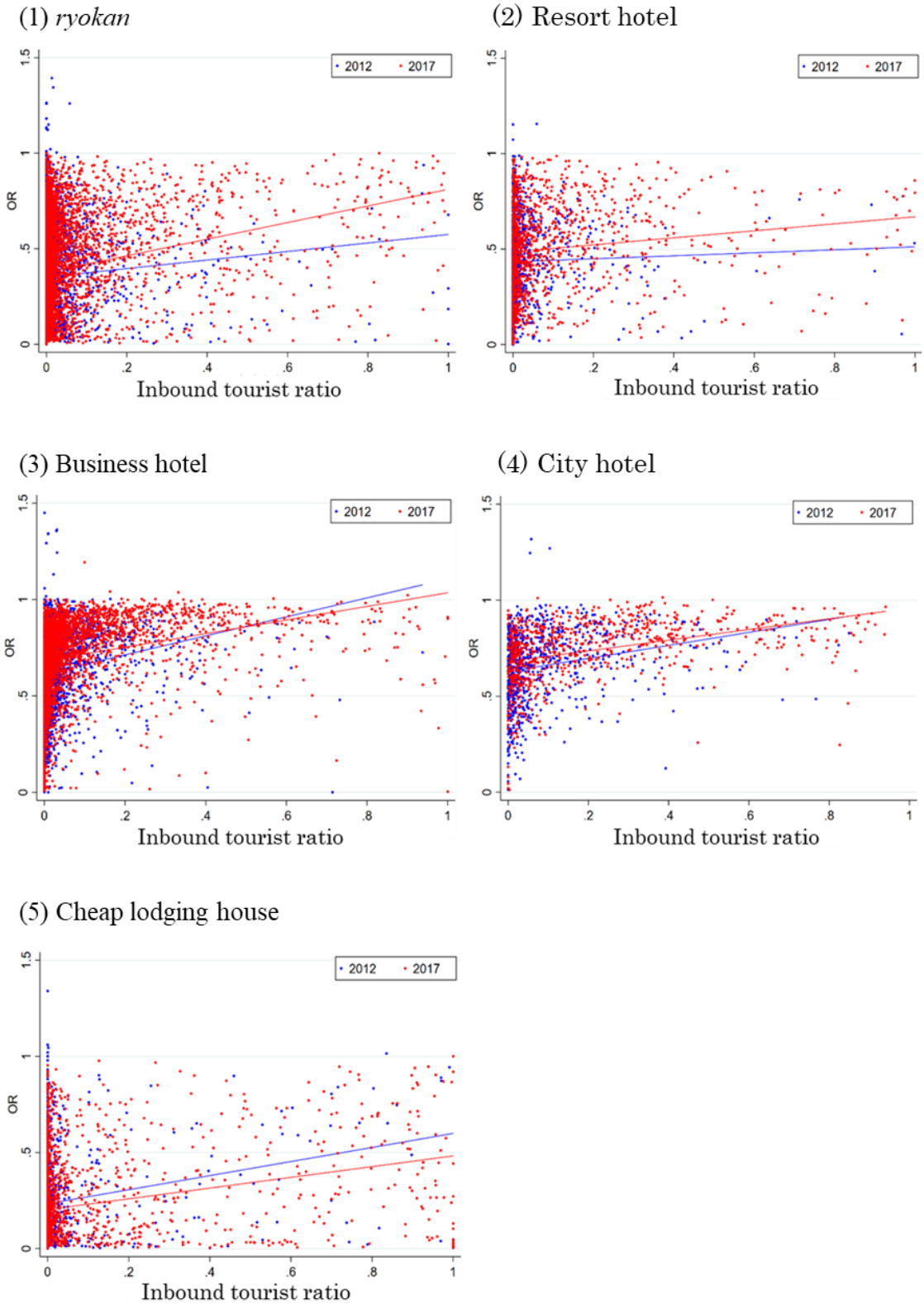
The next section demonstrates the importance of increasing the number of inbound tourists for the growth of OR and RevPAR. In Section 3, we introduce the data used and variables adopted in our empirical analysis. In Section 4, we determine the amenities effective in capturing inbound tourist demand based on our estimation results. In Section 5, we summarize the study's findings.

2. Correlation between the Inbound Tourist Ratio and Key Management Indicators in the Accommodations Industry

Are more inbound tourists required for each accommodation facility type? This section will observe the relationship between OR, RevPAR, which are key management indicators in the lodging industry and the inbound ratio. RevPAR is expressed as OR multiplied by the average daily rate. The ratio of visitors to Japan and OR are obtained from the AS, whereas RevPAR is sourced from OTA data. Each point represents a facility; these are the first graphs drawn regarding these interrelationships in Japan.

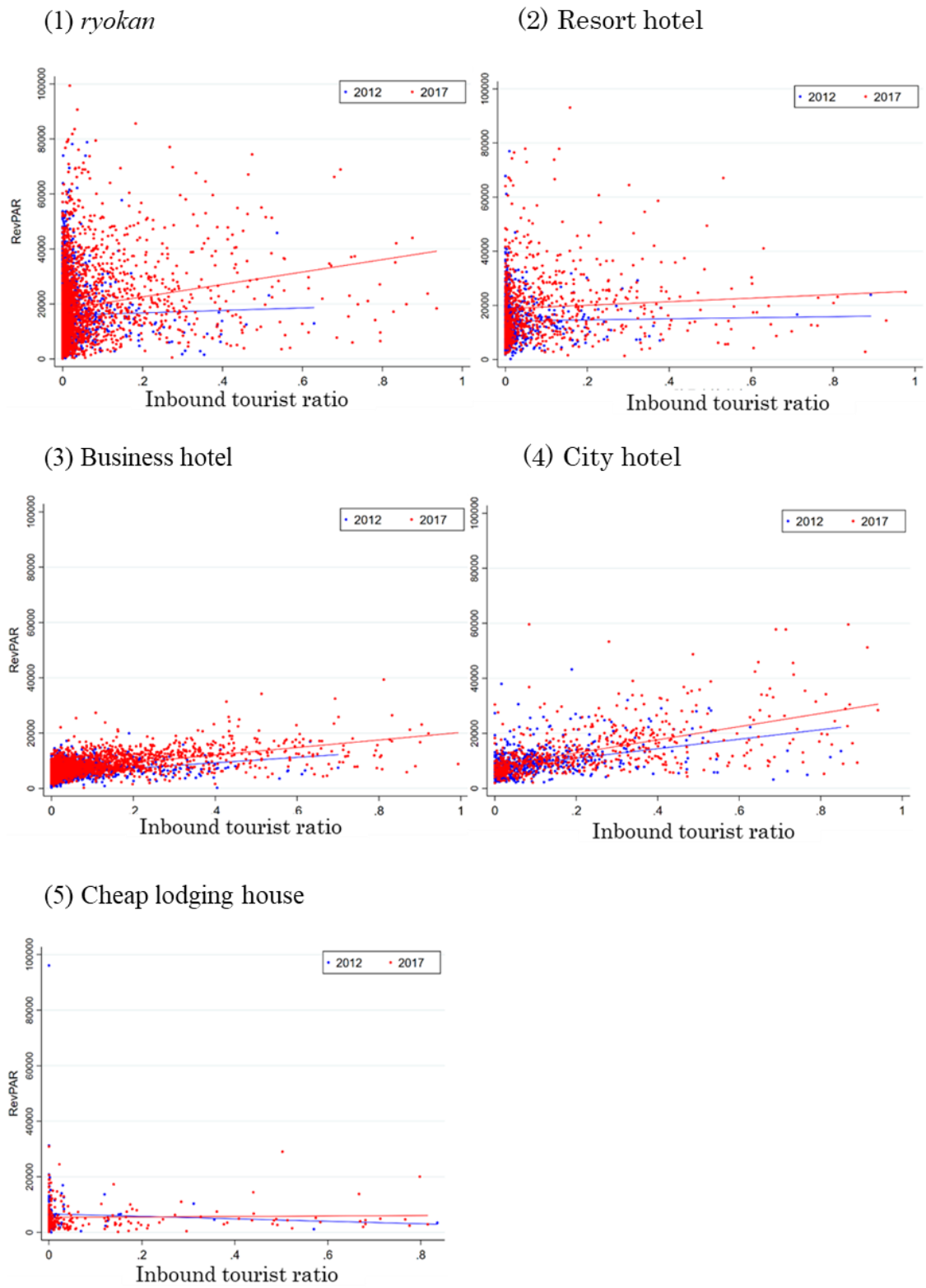
In Figure 2, business hotel ORs are higher than those of other types of facilities. In both 2012 and 2017, OR and inbound tourist ratio were positively correlated for all types of facilities. As shown in Figure 3, *ryokan*'s RevPAR is higher than other types of facilities. The ORs of *ryokan* and resort hotels are lower than those of business hotels and city hotels, but RevPAR is higher because of their higher unit prices. RevPAR is positively correlated with the inbound stay rate in 2017 for all facilities. An increase in the number of inbound tourists has a positive effect on the revenue management of each facility.

Figure 2. Scatter Plots Between OR and the Inbound Tourist Ratio in 2012 and 2017



Source: Authors' creation based on the Accommodation Survey (AS) from Japan Travel Agency (JTA).

Figure 3. Scatter Plots Between RevPAR (unit JPY) and the Inbound Tourist Ratio in 2012 and 2017



Source: Authors' creation based on the AS from JTA and OTA data.

3. Data Description

3.1. About the AS

In this study, we utilise monthly accommodation facility-level data from the AS conducted by the JTA for both the outcome and input variables. The survey aims to understand the Japanese accommodation industry and make it the basis for tourism administration. The survey includes items such as the number of rooms, the number of employees, type of facility, the guest capacity, and the total number of overnight guests for foreign and Japanese tourists. After the second quarterly AS in 2010, the JTA conducted surveys of all accommodation facilities with 10 or more employees. They also conducted a sampling survey for facilities with fewer than 10 employees. The JTA conducted a one-third random sampling of facilities with between five and nine employees, as well as a one-ninth random sampling of facilities with fewer than five employees. Thus, the number of facilities surveyed each year is approximately 10,000.

For our research purposes, we adopt the total number of overnight guests for foreign tourists (the total number of inbound tourists) as an outcome variable. Table A1 presents the descriptive statistics of the outcome variable used in Section 4.

3.2. About the Input Variables for Each Accommodation Facility

3.2.1. Characteristic-related variables for Accommodation

Number of rooms. This variable represents the size of each accommodation facility; data regarding this variable are obtained from the AS.

Number of occupied rooms per employee. Data on this variable are also obtained from the AS. This variable is calculated by dividing the number of rooms occupied by guests each month by the number of employees. If the number of employees remains constant, the larger the value, the more rooms for which each employee is responsible.

The number of people per room. Data are obtained from the AS. The number of people per room is calculated by dividing the total guest capacity by the number of rooms. For hotels, this is the number of beds, and for *ryokan*, it is the number of people who can sleep on a futon.

Chains dummy variable. Each accommodation facility either belongs to a chain (dummy variable = 1) or is independent (dummy variable = 0). Foreign-owned chains are included. The results are based on information from Japanese OTA companies and HOTERES. According to the 3 March 2017 issue of HOTERES, there were 9,967 hotels in

2017, 3,059 of which belonged to 112 hotel chains. Over the last decade, over 30 new hotel chains have been created. This is a key input variable for both efficiency measurement and revenue management.

3.2.2. Quality Variables for Accommodation

In Japan, there are no ratings in terms of a star system, so the monthly average sales price, review variables, and the number of peers in the same municipality are used as proxy variables for quality.

Monthly average selling price. The data were obtained from the OTA. The monthly average price was calculated from the daily data on the average daily rate for each guest type (i.e. business, couple, family, and group) of each facility and weighted by the total number of nights per month.

Overall evaluation of customer reviews. Information from two OTAs was used. Since both companies mainly target the domestic market and the values are reviewed and referred to by Japanese travellers, the evaluation has little influence on visitors' decision-making regarding Japan.

Number of competitors in the same municipality. This variable is calculated using data from the AS. This is a variable related to competition and spillover effects.

3.2.3. Amenity Variables of Accommodation

Internet availability in a room dummy variable. This is from the OTA. The variable takes the value of 1 if the internet is available in the room and 0 if it is not.

Dummy variable for Western rooms. Obtained from the OTA. This variable is for *ryokan* and cheap lodging houses. We considered why inbound tourists do not stay at *ryokan* very often and believed that Japanese rooms are avoided. Western-style rooms (i.e., featuring a bed, sofa, table, and chairs, and, in some facilities, an indoor bath) were introduced as an amenity of the accommodation facility. The dummy variable takes the value of 1 if a Western-style room is available and 0 if it is not.

Japanese room dummy variable. Obtained from the OTA. This is a variable for hotels. In hotels, the inclusion of Japanese-style rooms in hotels is considered an amenity. The variable takes the value of 1 if a Japanese-style room is available and 0 if it is not.

3.3. About the Input Variables for Regional Tourism Amenities

The number of World Heritage Sites, National Treasures, and Important Cultural Properties from the Agency for Cultural Affairs, various information on hot springs from the Ministry of the Environment, and information on parks showing the state of greenery from the Ministry of Land, Infrastructure, Transport, and Tourism were added as tourist amenities for each region. As for tourism infrastructure, we obtained information on the number of direct international flights per week from the Ministry of Land, Infrastructure, Transport, and Tourism and information on the fastest Shinkansen (excluding mini-Shinkansen) train stops from JR Group companies. Additionally, information on tourist information centres (JNTO) and consumption tax-free stores (JTA) is also available. Table A2 presents the descriptive statistics of the variables used in Section 4, showing mostly annual data, although semi-annual data are available for direct flights and consumption tax-free stores. The contribution of transportation infrastructure is significant in influencing the increase of inbound travellers and has been used in previous studies on efficiency and revenue management analyses (Yang and Lu, 2006 Hu et al., 2010; Honma and Hu, 2012; Yalcin and Mert, 2018; Latinopoulos, 2018; etc.). In this paper, we do not use distance information but apply the number of direct international flights in the prefecture in which the accommodation is located and a dummy variable for stops on the fastest bullet trains.

4. Estimation Model and Estimation Results

4.1. Estimation Model

The outcome variable is a log of the total number of inbound tourists for each accommodation facility. As shown in Table 1, the average overnight visitor rate in 2017 for each facility is approximately 30%, even for the highest city hotel. In fact, there are several facilities in which the inbound tourist rate for each accommodation facility is 0—52% of *ryokan*, 32% of resort hotels, 17% of business hotels, 6% of city hotels, and 77% of cheap lodging houses have a zero ratio. Estimations with an excess of zeros will result in the underestimation of positive coefficients. For such continuous variables with many zeros and a large number of samples distributed over small positive values around zero, the Tobit model is suitable, as expressed in the Tobit model formulation of $E(y|\boldsymbol{x}, \boldsymbol{z}, y > 0) = exp(\boldsymbol{\beta x} + \boldsymbol{\delta z})$ as follows:

$$lny_{i,t} = c + \sum \beta_k \, x_{k,i,t} + \sum \delta_s \, z_{s,pref,year} + year\ dummy_{i,year} + month\ dummy_{i,month} + \varepsilon_{i,t} \cdots (1)$$

where i is each facility, t is each month, $pref$ is the prefecture, and k, s is the number of input variables. $x_{k,i,t}$ is the number of rooms, the number of occupied rooms per employee, the number of people per room, chains dummy variable, monthly average selling price (1,000 yen), the overall evaluation of customer reviews, the number of competitors in the same municipality, internet availability dummies, Western-style room dummies (for *ryokan* and cheap lodging houses), and Japanese-style room dummies (for hotels). $z_{s,pref,year}$ is the number of dummies with direct international flights, the number of dummies with the fastest Shinkansen train stops, the number of consumption tax exemption stores, the number of World Heritage Sites, the number of national treasures, the number of important cultural properties, the number of public bathhouses using hot springs, the number of parks, the number of convenience stores, the number of department stores and supermarkets, and the number of restaurants. c is a constant term; β and δ are unknown parameters, including year and month dummies; and ε is an error term that follows a lognormal distribution. The years of interest are the 48 months of the 4-year period from 2014 to 2017 during the inbound tourism boom.

This paper examines the amenities that contribute to an increase in the number of inbound tourists to provide suggestions for facilities that currently do not have or have yet to have many inbound tourists. A positive coefficient indicates a percentage increase (decrease) in the number of guests when the input variable increases (decreases) by one unit. The following is a discussion of the results for each input variable provided in Table 2.

4.2. The Results of Characteristic-related Variables for Accommodation

Number of guest rooms. For all facilities, the number of rooms representing each facility's size contributes to an increase in the number of inbound tourists. The coefficient for *ryokan* is the largest, with an increase of one room resulting in an approximately 1.5% increase in the number of inbound tourists.

Number of occupied rooms per employee. When the number of employees is constant, this variable's value increases with the number of rooms. From the hospitality perspective, service time per room is longer when rooms are smaller. However, the coefficient is significantly positive for all facilities. This means that inbound tourists prefer more popular and busier accommodations.

The number of people per room (room capacity). The results for *ryokan* and business hotels were found to have a positive effect. As shown in Appendix 1, the average value for business hotels is 1.53 people, which means that the number of inbound tourists increases by 13.4% when the number of persons per room increases. The average value for *ryokan* is 4.07 people, which means that an increase of one person will increase the number of inbound tourists by 6.8%. Conversely, the average capacity of resort hotels is 3.37 people, but facilities with one additional person in terms of capacity will receive 13.2% fewer inbound tourists. A change in capacity had no effect on city hotels and cheap lodging houses.

Chains (dummy variable). The number of *ryokan* with more inbound tourists was higher for independent businesses. For hotels, the number of inbound tourists staying at facilities belonging to chains was much higher than that at independent facilities, ranging from 31.7% (resort hotels) to 88.8% (city hotels).

4.3. Quality Variables for Accommodation

Monthly average selling price (JPY1,000). Typically, the quantity demanded falls when the price rises, but for tourists visiting Japan, the results indicate that the number of guests increases for *ryokan*, resort, business, and city hotels. The fact that the price coefficient is still positive even after controlling for various hotel characteristics suggests that the price variable represents the quality of the accommodation facility. For business hotels, an increase of JPY1,000 in the price increases the number of guests by 12.4%. This may indicate the tendency of many visitors to Japan to stay at high-quality places to avoid making mistakes. Alternatively, it could mean that facilities that can accommodate visitors to Japan are in a higher price range.

Overall evaluation of customer reviews. There is almost no endogeneity problem since these are evaluations of facilities in the Japanese language by Japanese people. The results show that business hotels and city hotels were highly rated but had more inbound tourists, whereas other facilities were significantly negative.

Number of competitors in the same municipality. For all facilities, the number of inbound tourists increased with the number of competitors in each municipality. Although a more in-depth discussion is needed, there may be a positive spillover effect because of the lodging industry's concentration and the presence of other firms in the same accommodation type. In the future, more accurate observation of the peer effect could be accomplished by distinguishing between chains and independent accommodation facilities, as in Hollenbeck

(2017).

4.4. Amenities of accommodations

Internet availability in the room (dummy variable). In all accommodation facilities, the ability to use the internet in the room is linked to attracting visitors to Japan, and the value is particularly high in hotels, ranging from 53.6% to 76.2%.

Western-style rooms (dummy variable). This is a unique variable in this paper. We believe that the low rate of visitors to *ryokan* is due to the physical burden of the Japanese lifestyle, so we examined the effect of amenities in Western-style rooms with sofas, tables and chairs, beds, and private bathrooms. The availability of Western-style rooms resulted in a 12.3% increase in the number of guests in the comparison with *ryokan*.

Japanese-style room (dummy variable). We examined the effect of having a room with Japanese culture and lifestyle in hotels. The results show that having Japanese-style rooms is not attractive to visitors to Japan.

4.5. Regional Tourism Amenities

Airport with direct international flights (dummy variable). Accommodations in areas in which there were airports with direct international flights attracted more visitors to Japan, with city hotels seeing a 65% increase.

Near a station with the fastest Shinkansen train (dummy variable). This is a dummy variable for whether the fastest Shinkansen train stops in the same prefecture as the accommodation facility. Only resort hotels had a significantly positive value (11.4%).

Number of consumption tax-free stores (100 stores). In *ryokan*, resort hotels, and business hotels, there was a positive correlation of the number of consumption tax-free stores with the number of inbound tourists.

Number of World Heritage Sites. In a study on World Heritage Sites and travelers, Su et al. (2014) showed that the designation of World Heritage Sites in 66 countries contributed very strongly to inbound demand in each country. Conversely, Huang et al. (2012) found that the inclusion of Macau's historical centre on the World Heritage List resulted in a short-term increase in inbound demand from Asian countries but not a sustained one. Using municipal-level data, Ribaudo and Figini (2017) demonstrated that the tourism demand growth rate 5 years after the inclusion of 16 World Heritage Sites was lower than before, raising questions about the designation's effectiveness. As described above, the

impact of World Heritage Sites on tourism demand is divided into positive and negative results. In the case of Japan, the number of World Heritage Sites in the prefecture in which the facility is located contributes to an increase in demand, except for city hotels, which is a new result for Japan.

Principal components of national treasures and important cultural properties. Variables for the number of national treasures and important cultural properties in each prefecture were created using principal component analysis. The results indicate that the number of inbound tourists increased for all facilities when the two principal component variables were combined.

Number of public bathhouses using hot springs in the same municipality. One Japanese cultural experience that can be attained on a trip (Serbulea and Payyappallimana, 2012) is visiting a hot spring, and the results of the FY 2009 "Consumption Trend Survey for Foreigners Visiting Japan" showed that 60% of repeat visitors experienced skiing and hot springs (mainly in four East Asian countries). The estimated results indicate that the number of inbound tourists will increase at *ryokan* and city hotels, although by a small magnitude.

Number of parks in the same prefecture (100 locations). This is a variable related to the greening of prefectures. The number of parks is positively correlated with lodging demand for business hotels, city hotels, and cheap lodging houses.

Number of convenience stores in the same prefecture (per 100,000 population). Although they are indispensable to Japanese travellers (mostly business travellers), convenience stores did not contribute to increased demand from visitors to Japan (except for resort hotels).

Number of department stores and general supermarkets in the same prefecture (per 100,000 population). The number of department stores and supermarkets is positively correlated with resort hotels, city hotels, and cheap lodging houses. The *ryokan* have a negative effect, whereas business hotels have no relationship.

Number of restaurants in the same prefecture (per 1,000 population). For business hotels, city hotels, and cheap lodging houses, an increase in the number of restaurants leads to an increase in inbound tourists. In the case of *ryokan*, there is no effect because they usually have room service for meals and in the case of resort hotels, the result is a decrease in demand.

Table 2. Estimation Results Obtained Using the Tobit Estimation Method

Dependent variable ln(number of inbound guests)	(1) Ryokan	(2) Resort hotel	(3) Business hotel	(4) City hotel	(5) Cheap lodge house
covariates	coef, (S.E.)	coef, (S.E.)	coef, (S.E.)	coef, (S.E.)	coef, (S.E.)
num. of room	0.0149***	0.00610***	0.00636***	0.00305***	0.00192***
	(0.000224)	(0.000133)	(9.51e-05)	(0.000143)	(0.000373)
capital-labor ratio	0.0124***	0.00769***	0.00127***	0.00346***	0.00120***
	(0.000652)	(0.000770)	(5.25e-05)	(0.000314)	(0.000466)
capacity per room	0.0681***	-0.132***	0.134***	0.00994	0.00900
	(0.00684)	(0.0127)	(0.0216)	(0.0266)	(0.00615)
Chain dummy independent=0, chain=1	-0.364*** (0.0226)	0.317*** (0.0282)	0.487*** (0.0122)	0.888*** (0.0218)	0.847*** (0.120)
ADR(average daily price) JPY1,000	0.0181*** (0.000444)	0.00740*** (0.000763)	0.124*** (0.00223)	0.0548*** (0.00183)	-0.00664* (0.00364)
Customer review 1 to 5 point	-0.378*** (0.0199)	-0.889*** (0.0399)	0.0653*** (0.0156)	0.310*** (0.0328)	-0.633*** (0.0757)
num. of competitors municipality	0.0247*** (0.000581)	0.0454*** (0.00230)	0.0124*** (0.000268)	0.00600*** (0.00114)	0.128*** (0.00915)
internet dummy none=0, available=1	0.164*** (0.0134)	0.611*** (0.0277)	0.536*** (0.0351)	0.762*** (0.0814)	0.183** (0.0709)
Western room dummy none=0, available=1	0.123*** (0.0145)	N.A.	N.A.	N.A.	0.266*** (0.0646)
Japanese room dummy none=0, available=1	N.A.	-0.00146 (0.0267)	-0.308*** (0.0155)	-0.636*** (0.0207)	N.A.
International direct flight dummy none=0, there is the airport=1	0.202*** (0.0151)	0.178*** (0.0311)	0.370*** (0.0129)	0.650*** (0.0245)	0.313*** (0.0915)
fastest train stop of shinkansen dummy none=0, there is the station=1	-0.0426*** (0.0145)	0.114*** (0.0287)	-0.189*** (0.0122)	-0.217*** (0.0236)	0.0781 (0.0822)
num. of consumption tax free shop (100 shops)	0.0121*** (0.00104)	0.0208*** (0.00205)	0.00818*** (0.000371)	0.000344 (0.000729)	-0.00256 (0.00220)
num. of world heritage	0.153*** (0.0102)	0.0890*** (0.0199)	0.0166** (0.00832)	-0.0376** (0.0174)	0.253*** (0.0505)
Principal components of national treasure and important cultural	-0.00536 (0.00567)	0.0992*** (0.0121)	0.167*** (0.00496)	0.154*** (0.00749)	0.0318 (0.0352)
Principal components of national treasure and important cultural	0.507*** (0.0248)	0.806*** (0.0425)	0.0757*** (0.0208)	-0.0789** (0.0360)	-0.599*** (0.118)
num. of public bath with hot-spring	0.000165*** (4.39e-05)	-0.000239*** (8.28e-05)	8.47e-05** (4.20e-05)	0.000526*** (9.37e-05)	0.000409 (0.000259)
num. of park (100 parks)	8.01e-05 (0.000693)	-0.00870*** (0.00127)	0.0158*** (0.000469)	0.0319*** (0.000946)	0.0295*** (0.00277)
num. of convenience stores (per 100,000 population)	-0.0253*** (0.00204)	0.00817** (0.00369)	-0.0518*** (0.00152)	-0.0628*** (0.00284)	-0.0420*** (0.00903)
num. of department stores and general supermarkets (per 100,000 population)	-0.201*** (0.0259)	0.166*** (0.0449)	-0.00817 (0.0194)	0.239*** (0.0363)	0.252** (0.113)
num. of restaurants (per 1,000 population)	8.01e-05 (0.000693)	-0.00870*** (0.00127)	0.0158*** (0.000469)	0.0319*** (0.000946)	0.0295*** (0.00277)
Constant term	1.583*** (0.123)	4.541*** (0.205)	1.033*** (0.0850)	1.419*** (0.175)	2.568*** (0.402)
Year dummy	✓	✓	✓	✓	✓
Monthly dummy	✓	✓	✓	✓	✓
num. Obs.	57,248	22,495	90,984	26,282	3,209
R2_adj.	0.329	0.433	0.501	0.612	0.406

Robust standard error is in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Source: Authors' calculating based on the AS from JTA, OTA, and regional statistics data.

5. Summary

In this paper, we conducted an empirical analysis of the third type of concentration, that of lodging facilities, using AS data from OTA companies and official statistics on tourism amenities in the region. Visitors to Japan tend to stay mostly in hotels (Table 1) and less in *ryokan* and cheap lodging houses. The purpose of this study aimed to find variables that are effective for *ryokan*, which have a high unit cost (Figure 3), a large number of facilities (Figure 1), and a low OR (Figure 2) and gain knowledge on how to diversify visitors from hotels to *ryokan*. The results showed that inbound tourists tended to stay at places with a high unit price for *ryokan* and hotels and tended to care about price only for cheap lodging houses. Many visitors chose independent businesses only for *ryokan*, suggesting that repeat visitors to *ryokan* tend to prefer unique services and hospitality. As for hotels, chain hotels have been able to capture demand from inbound tourists. Internet access in the rooms is also effective for all facility types. As for *ryokan*, more inbound tourists stay at facilities that have Western-style rooms or Western-style amenities in addition to Japanese-style rooms. As for regional tourism amenities, direct international flights, the availability of a stop on the fastest Shinkansen trains, and an increase in the number of consumption tax-free stores are also effective at increasing demand for visits to Japan; this is also the case with the number of World Heritage Sites. To the best of the author's knowledge, this study is the first to analyse the effects of facility characteristics, quality, amenities, and regional tourism amenities for each of the five facility types.

The results of this paper indicate that to increase the number of tourists from Southeast Asia, Europe, and the United States who visit *ryokan* and cheap lodging houses that have a sufficient OR, it would be effective to provide in-room internet access, an environment that is similar to the lifestyle of tourists, while allowing them to experience Japanese culture (introduction of Western-style or Japanese-style rooms with beds, tables, sofas, etc.), and amenities such as in-room bathrooms. According to the results of the "Consumption Trend Survey for Foreigners Visiting Japan," the network environment, communication with staff, multilingual displays, and delays in going cashless have been cited by tourists every year as problems encountered during their stay in Japan. The results of this analysis do not contradict the above voices of visitors to Japan.

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Appendices

Table A1: Descriptive Statistics of the Outcome and the Input Variables for Each Accommodation Facility

	Total number of inbound tourists (Person)	Number of rooms	Number of occupied rooms per employee	Number of people per room	Chains dummy variable	Monthly average selling price (1,000 JPY)	Overall evaluation of customer reviews	Number of competitors in the same municipality	Internet availability in the room dummy var.	Western-style rooms dummy var.	Japanese-style room dummy var.
ryokan (Japanese style inn)											
Mean	96.27	28.55	16.19	4.07	0.07	36.20	4.21	11.99	0.46	0.49	0.96
S.D.	518.79	38.00	21.64	1.59	0.26	18.41	0.40	12.46	0.50	0.50	0.20
Min.	0	0	0	0	0	0.095	1.70	1	0	0	0
Max.	30,463	720	1,250	36	1	162	5	77	1	1	1
N	45,502	45,502	45,458	45,488	31,571	22,535	22,872	45,502	22,872	22,872	22,872
Resort hotel											
Mean	589.30	96.15	25.46	3.37	0.28	34.07	4.19	5.06	0.67	0.94	0.60
S.D.	1821.49	145.49	30.24	1.22	0.45	18.86	0.36	5.12	0.47	0.25	0.49
Min.	0	1	0	0	0	4.18	2.80	1	0	0	0
Max.	29921	2007	600.7143	13.375	1	285.96	5	23	1	1	1
N	11,473	11,473	11,473	11,473	9,584	7,553	7,678	11,473	7,678	7,678	7,678
Business hotel											
Mean	503.12	118.07	126.53	1.53	0.43	10.20	3.87	17.68	0.97	0.99	0.20
S.D.	1552.43	95.16	103.81	0.69	0.50	3.71	0.37	21.84	0.17	0.08	0.40
Min.	0	0	0	1	0	2.41	1.80	1	0	0	0
Max.	43022	1384	1027	45.10897	1	55.99507	4.90	101	1	1	1
N	33,604	33,604	33,601	33,592	30,701	26,215	26,380	33,604	26,380	26,380	26,380
City hotel											
Mean	2357.84	183.12	46.24	1.85	0.46	16.73	4.11	9.92	0.97	1.00	0.44
S.D.	4837.21	220.93	52.74	0.52	0.50	9.88	0.34	10.66	0.17	0.04	0.50
Min.	0	3	0	1.02	0	4.01019	2.80	1	0	0	0
Max.	59789	3560	544.353	6	1	89.64179	4.90	37	1	1	1
N	8,114	8,114	8,113	8,114	7,659	6,976	6,986	8,114	6,986	6,986	6,986
Cheap lodging houses											
Mean	40.13	15.37	17.94	5.39	0.02	14.87	4.16	4.99	0.54	0.45	0.43
S.D.	231.89	36.25	46.11	7.11	0.13	12.26	0.46	5.61	0.50	0.50	0.49
Min.	0	0	0	0	0	2.16	2.60	1	0	0	0
Max.	5762	590	1068.5	157.5	1	90	5.00	37	1	1	1
N	18,043	18,043	17,961	18,036	4,903	1,751	1,830	18,043	1,830	1,830	1,830

Source: Authors' calculating based on the AS from JTA, OTA, and regional statistics data.

Table A2. Descriptive Statistics of the Input Variables for Regional Tourism Amenities

Regional tourism amenities	Mean	S.D.	Min.	Max.	N
Airport with direct international flights (dummy var.)	0.55	0.50	0	1	47
Near a station with the fastest Shinkansen train (dummy var.)	0.49	0.51	0	1	47
Number of consumption tax-free stores (100 stores)	978.49	1855.71	70	11656	47
Number of World Heritage Sites	0.64	0.90	0	4	47
Number of national treasures	6.15	14.61	0	72	47
Number of important cultural properties	96.40	93.21	15	567	47
Number of public bathhouses using hot springs in the same municipality	168.04	143.57	18	710	47
Number of parks in the same prefecture (100 locations)	1683.09	1380.29	203	5986	47
Number of convenience stores in the same prefecture (per 100,000 pop.)	27.28	4.02	17.1	40.6	47
Number of department stores and general supermarkets in the same prefecture (per 100,000 pop.)	1.30	0.29	0.67	2.02	47
Number of restaurants in the same prefecture (per 1,000 pop.)	4.66	0.73	3.23	6.87	47

Source: Authors' calculating based on the AS from JTA, OTA, and regional statistics data.

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