Section 4
Analysis of the Tourism Industry Using the Tourism Satellite Account and Input-Output Tables

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1. Objective and Positioning of this Section

In this section, we will shed light on an analysis of the influence of tourism industry in the Japanese economy and the Kansai economy using input-output analysis methods. A feature of the input-output table is that it allows the influence of the industry in question and that of other industries to be compared. We will take advantage of this feature to conduct a comparative analysis of the positioning and influence of the tourism industry in the national economy.

In the second subsection, we will outline the tourism industry in Japan based on the Tourism Satellite Account. We will also process the 2017 Extended Input-Output Tables for the purpose of analyzing the tourism industry to demonstrate the positioning of the tourism industry in the national economy in terms of employment, income, and influence on other industries.

Tourism is an important industry for Kansai, not only in the current situation in which it has been hit hard by the COVID-19 pandemic, but also for the future. Thus, in the third subsection, we used the input-output tables for the 10 Kansai prefectures to compare the characteristics of the tourism industry in each Kansai prefecture. Specifically, we focused on the five main industries that constitute the tourism industry and analyzed the characteristics of each prefecture.

In addition to the analysis of sustainable strategies for the tourism industry in Kansai up to the previous section, the input-output analysis described in this section and the following section should help to deepen the understanding of the tourism industry even more.

2. Overview of the TSA and Outline of the Tourism Industry

Tourism is a broad industry, but there is no sector named “tourism” in the Japan Standard Industrial Classification. The Tourism Satellite Account (TSA) is an estimate used as a framework for quantitatively capturing tourism through a unified method. The TSA is one of the satellite accounts of the System of National Accounts (SNA), and the World Tourism Organization (UNWTO) described

the international standard in the TSA Recommended Methodological Framework 2008 (TSA: RMF08). In this subsection, we will outline the tourism industry in Japan and conduct a unique tourism industry analysis by processing the Ministry of Economy, Trade and Industry's 2017 Extended Input-Output Tables (hereinafter referred to as the "Extended Tables") based on the TSA.

(1) Overview of the TSA

In Japan, the latest version of TSA available as of June 2021 was for 2018. We will outline the trends in the tourism industry based on the figures listed there.

(1.3) at the top of Table 4-4-1 is domestic tourism expenditure by foreigners visiting Japan, (2.9) is domestic tourism expenditure by Japanese citizens, (4.2) is imputed rent from vacation homes, and (4.3) is the total of the three left columns, which the TSA refers to as internal tourism consumption. (6.15) is domestic supply under the SNA and the percentages of internal tourism consumption in this are listed as the tourism ratios in (6.16).

Next, looking at the table, "A. Consumption products" is divided into "A.1. Tourism characteristic products" and "A.2. Other consumption products." "Tourism characteristic products" are major products (mainly services) used for an international comparison of tourism expenditure. "Other consumption products" consist of "tourism connected products" and "non-tourism related consumption products." "Tourism connected products" consist mainly of goods such as souvenirs and the few services that exist are exhibition/convention participation fees, hot spring/hot bath facilities, etc. "Non-tourism related consumption products" are entirely services and consist of cleaning, hairdressing/beauty industry, etc. Internal tourism consumption in 2018 was JPY 27,431 billion, of which, consumption by foreigners visiting Japan was JPY 5 trillion, accounting for 18% and consumption by Japanese citizens was JPY 21,985 billion, accounting for 80%.

Looking first at consumption by foreigners visiting Japan (inbound tourism expenditure), "Tourism characteristic products" were JPY 3,388 billion, while "Other consumption products" were JPY 1,585 billion. The former accounted for 67.8% and the latter 31.7% of the total inbound tourism expenditure.

"Tourism characteristic products" consist mainly of service expenditures, with expenditure high in "Accommodation services for visitors" and "Food- and beverage-serving services," accounting for JPY 1,391 billion and JPY 1,025 billion respectively. The next highest expenditure was in "Air passenger transport services" at JPY 368 billion and "Railway passenger transport services" at JPY 349 billion, followed by "Road passenger transport services" at JPY 72 billion, "Sports and recreational services" at JPY 61 billion, "Transport equipment rent-

Table 4-4-1 Internal tourism consumption by products and tourism ratios

(Billion ¥)

Products	Inbound tourism expenditure (1.3)	Domestic tourism expenditure (2.9)	Other components of tourism consumption (4.2)	Internal tourism consumption (4.3)	Domestic supply (at purchasers prices) (6.15)	Tourism ratios (%) (6.16) =(4.3) / (6.15) x 100
A. Consumption products	4,973	21,985	446	27,404	1,061,119	2.6
A.1. Tourism characteristic products	3,388	13,387	446	17,220	60,384	28.5
1. Accommodation services for visitors	1,391	3,748	446	5,585	6,147	90.9
1.a. Accommodation services for visitors other than 1.b	1,391	3,748	X	5,139	5,701	90.1
1.b. Vacation home ownership (imputed)	X	X	446	446	446	100.0
2. Food- and beverage-serving services	1,025	2,694	X	3,720	26,758	13.9
3. Railway passenger transport services	349	2,448	X	2,796	5,460	51.2
4. Road passenger transport services	72	611	X	683	3,363	20.3
5. Water passenger transport services	3	109	X	112	131	85.6
6. Air passenger transport services	368	2,159	X	2,527	3,304	76.5
7. Transport equipment rental services	56	306	X	363	1,956	18.5
8. Travel agencies and other reservation services	23	349	X	372	2,309	16.1
9. Cultural services	40	336	X	376	6,057	6.2
10. Sports and recreational services	61	625	X	686	4,900	14.0
A.2. Other consumption products	1,585	8,599	X	10,184	1,000,735	1.0
1. tourism connected products	1,554	7,777	X	9,331	275,079	3.4
1.a. goods	1,530	6,362	X	7,892	197,587	4.0
1.b. services	24	1,415	X	1,439	77,492	1.9
2. non-tourism related consumption products	31	821	X	853	725,655	0.1
2.a. goods	X	X	X	X	270,883	0.0
2.b. service	31	821	X	853	454,772	0.2
B. Non-consumption products	27	X	X	27	1,570	1.7
B.1. Valuable	27	X	X	27	1,570	1.7
Total	5,000	21,985	446	27,431	1,062,689	2.6

Source: the Japan Tourism Agency (2020)

al services" at JPY 56 billion, and "Cultural services" at JPY 40 billion.

In "Other consumption products," "tourism connected products," which are mainly souvenirs, was JPY 1,554 billion. Next, for consumption by Japanese citizens (Domestic tourism expenditure), "Tourism characteristic products" was JPY 13,387 billion while "Other consumption products" was JPY 8,599 billion. The former accounted for 60.9% and the latter 39.1% of the total domestic tourism expenditure.

The breakdown of "Tourism characteristic products" shows "Accommodation services for visitors" was high at JPY 3,748 billion, and then "Food- and beverage-serving services" at JPY 2,694 billion, "Railway passenger transport services" at JPY 2,448 billion, and "Air passenger transport services" at JPY 2,159 billion more or less the same. Among "Other consumption products," "tourism connected products" was JPY 7,777 billion, of which, "goods" had a large share at JPY 6,362 billion. Looking at the "Tourism ratios," it was 2.6% for the total for "Consumption products," 28.5% for "Tourism characteristic products," and 4.0% for "goods" in "tourism connected products." While the tourism ratio was 90.1% for "Accommodation services for visitors" where the weight of "Internal tourism consumption" is high, it remained at 13.9% in "Food- and beverage-serving services" where the weight is also high. "Water passenger transport services" and "Air passenger transport services" were high at 85.6% and 76.5% respectively, while "Railway passenger transport services" was 51.2%.

Additionally, changes in tourism GDP based on the TSA are shown in Table 4-4-2. Tourism GDP is defined as "the gross value added of goods and services (tourism supply) provided to tourists." It trended in the range of JPY 11 trillion in the late 2010s, accounting for around 2% of GDP.

Table 4-4-2 Tourism GDP and Tourism GDP/ GDP

(Billion ¥)

	2014	2016	2018
Tourism GDP	8,631	10,585	10,712
Tourism GDP/ GDP	1.7%	2.0%	2.0%

Source: the Japan Tourism Agency (2020)

(2) Outline of the Tourism Industry

The Japan Tourism Agency (2018) estimated the economic ripple effect of tour-

ism based on the 2015 Input-Output Tables[1]. However, in this analysis, the relative size of the economic ripple effect of tourism as a single industry was not identified. Thus, in this subsection, we separate the goods and services related to tourism (tourism sector) and those not related to tourism (non-tourism sector) from the 2017 Extended Tables to identify the characteristics of the economic ripple effect of the tourism industry[2].

1) Inducement Coefficient for Production, etc., Caused by Tourism Goods and Services

To compare the tourism industry with other industries, we separated tourism goods and services from the 2017 Extended Tables and compiled them as major aggregated classifications (37 sectors). However, three types of compilations were made for tourism goods and services, as shown in Table 4-4-3. Compilation type 1 has 10 sectors in the tourism sector and consists of a total of 47 sectors together with the non-tourism sectors. Compilation type 2 has 3 tourism sectors and has a total of 40 sectors, while compilation type 3 consists of 38 sectors.

Below, we will obtain the Production inducement coefficients, gross value

Table 4-4-3 Pattern of tourism goods and services

Type 1	Type 2	Type 3
Tourism: Beverages and Foods	Tourism: Goods	Tourism
Tourism: Non-Beverages and Foods		
Tourism: Transport (passengers)	Tourism: Service	
Tourism: Accommodation		
Tourism: Restaurant		
Tourism: Sports Facilities		
Tourism: Information Service		
Tourism: Car rental		
Tourism: Trade margins	Tourism: Fare and margins	
Tourism: Fare		

Source: Compiled by the author.

1) It is estimated that the internal tourism consumption of JPY 27.4 trillion in 2018 led to an induced production value of JPY 36.9 trillion, gross value added of JPY 18.7 trillion, and employment of 3.145 million people. All are the total of the direct effect and the primary indirect effect.
2) Refer to Shimoda, Inada, and Takabayashi (2021) for the specific method of dividing the tourism sectors from the non-tourism sectors.

added, and employment by compilation type. In this subsection, the inducement coefficient caused by an industry is defined as the inducement of production, gross value added, and employment in the overall economy when final demand for the relevant industry increases by one unit[3]. Table 4-4-4 shows the inducement coefficients calculated based on compilation type 1 (47 sectors) with the tourism sector being shaded. Those high in production inducement (left column) are the manufacturing industries, such as Transportation equipment (2.45), Iron and steel (2.43), and Pulp, paper and wooden products (1.98). Conversely, the production inducement of tourism sectors is not that high. The highest is Restaurant (1.91) ranked in 8th place, followed by Beverages and Foods (1.82) in 15th, Non-Beverages and Foods (1.77) in 19th, Accommodation (1.73) in 23rd, and Information Service (1.70) in 24th. Other tourism sectors, such as Transport (passengers) and Trade margins, ranked 30th or lower.

Meanwhile, in terms of gross value added inducement (center column), the ranks change completely, with tourism sectors that ranked low in production inducement moving to the higher ranks. For example, Car rental, which was highest in value added inducement, ranked 41st in production inducement but ranked 2nd in gross value added inducement (41st to 2nd, same hereinafter). Other tourism sectors that moved up the ranks include Sports Facilities (43rd to 4th), Trade margins (38th to 7th), Fare (42nd to 8th), Information Service (24th to 15th), Transport (passengers) (30th to 18th), and Accommodation (23rd to 20th). Conversely, Restaurant, which was relatively high in production inducement, lowered its rank (8th to 23rd). In general, since the service industry has a high value added ratio, its value added inducement tends to be relatively high compared to production inducement.

The inducement of employment (right column) by the tourism sector shows a trend similar to the inducement of value added, ranking relatively higher than the inducement of production. However, there are individual differences. First, Restaurant, which was 23rd in value added inducement, rose to 2nd in employment inducement. The same applies to Accommodation, which was 20th in value added inducement and 7th in employment inducement.

Next, below are the inducement coefficients based on compilation type 2.

3) "Production inducement coefficient" commonly used in input-output analysis refers to the multiplying factor of the production value induced by a final demand item and represents the size of production induced by one unit of demand for the final demand item. Conversely, the "inducement coefficient for production" in this subsection is defined as the column sum of the Leontief inverse matrix. Note that this represents the size of production induced by one unit of demand for goods and services in the column, which is a different definition from that of "production inducement coefficient."

Table 4-4-4 Production Inducement coefficients, gross value added, and employment based on compilation type 1 (47 sectors)

	Industry	Production	Industry	GVA	Industry	Employment
1	Transportation equipment	2.45	Real estate	0.98	Agriculture, forestry and fishery	0.38
2	Iron and steel	2.43	Tourism: Car rental	0.97	Tourism: Restaurant	0.25
3	Pulp, paper and wooden products	1.98	Finance and insurance	0.96	Personal services	0.21
4	Beverages and Foods	1.95	Tourism: Sports Facilities	0.95	Textile products	0.17
5	Metal products	1.95	Commerce	0.95	Membership-based associations, n.e.c.	0.17
6	Plastic products and rubber products	1.93	Education and research	0.95	Tourism: Sports Facilities	0.16
7	General-purpose machinery	1.92	Tourism: Trade margins	0.95	Tourism: Accommodation	0.15
8	Tourism: Restaurant	1.91	Tourism: Fare	0.94	Beverages and Foods	0.15
9	Chemical products	1.91	Information and communications	0.93	Tourism: Beverages and Foods	0.15
10	Electrical machinery	1.90	Business services	0.93	Medical, health care and welfare	0.15
11	Information and communication electronics equipment	1.87	Waste management service	0.93	Tourism: Trade margins	0.14
12	Production machinery	1.85	Transport and postal services	0.92	Commerce	0.14
13	Electronic components	1.85	Public administration	0.92	Tourism: Fare	0.14
14	Water supply	1.82	Membership-based associations, n.e.c.	0.92	Business services	0.14
15	Tourism: Beverages and Foods	1.82	Tourism: Information Service	0.91	Construction	0.13
16	Business oriented machinery	1.80	Water supply	0.91	Miscellaneous manufacturing products	0.13
17	Construction	1.79	Medical, health care and welfare	0.91	Waste management service	0.13
18	Miscellaneous manufacturing products	1.77	Tourism: Transport (passengers)	0.91	Pulp, paper and wooden products	0.11
19	Tourism: Non-Beverages and Foods	1.77	Personal services	0.90	Metal products	0.11
20	Information and communications	1.76	Tourism: Accommodation	0.90	Education and research	0.11
21	Agriculture, forestry and fishery	1.75	Construction	0.88	Tourism: Transport (passengers)	0.10
22	Non-ferrous metals	1.74	Mining	0.87	Tourism: Information Service	0.10
23	Tourism: Accommodation	1.73	Tourism: Restaurant	0.87	Plastic products and rubber products	0.10
24	Tourism: Information Service	1.70	Miscellaneous manufacturing products	0.87	Tourism: Non-Beverages and Foods	0.10
25	Personal services	1.69	Tourism: Beverages and Foods	0.87	Public administration	0.09
26	Mining	1.67	Agriculture, forestry and fishery	0.86	Transport and postal services	0.09
27	Public administration	1.66	Production machinery	0.86	Ceramic, stone and clay products	0.09
28	Ceramic, stone and clay products	1.65	Metal products	0.85	Production machinery	0.09
29	Textile products	1.64	General-purpose machinery	0.84	Information and communications	0.08
30	Tourism: Transport (passengers)	1.59	Beverages and Foods	0.84	Finance and insurance	0.08
31	Business services	1.58	Ceramic, stone and clay products	0.82	Mining	0.08
32	Membership-based associations, n.e.c.	1.56	Pulp, paper and wooden products	0.82	General-purpose machinery	0.08
33	Medical, health care and welfare	1.53	Plastic products and rubber products	0.81	Business oriented machinery	0.08
34	Transport and postal services	1.52	Tourism: Non-Beverages and Foods	0.80	Electronic components	0.08
35	Electricity, gas and heat supply	1.51	Business oriented machinery	0.80	Electrical machinery	0.08
36	Waste management service	1.50	Electrical machinery	0.77	Information and communication electronics equipment	0.07
37	Finance and insurance	1.49	Transportation equipment	0.77	Transportation equipment	0.07
38	Tourism: Trade margins	1.47	Electronic components	0.76	Water supply	0.07
39	Education and research	1.45	Iron and steel	0.75	Tourism: Car rental	0.07
40	Commerce	1.44	Chemical products	0.75	Chemical products	0.05
41	Tourism: Car rental	1.37	Textile products	0.74	Non-ferrous metals	0.05
42	Tourism: Fare	1.37	Information and communication electronics equipment	0.74	Iron and steel	0.04
43	Tourism: Sports Facilities	1.36	Electricity, gas and heat supply	0.64	Electricity, gas and heat supply	0.04
44	Real estate	1.23	Non-ferrous metals	0.55	Real estate	0.02
45	Petroleum and coal products	1.17	Petroleum and coal products	0.42	Petroleum and coal products	0.01

Source: Estimated by the author.

The table has been omitted. In production inducement, the rankings were low for the tourism sector, with Goods (15th), Service (21st), and Fare and margins (34th) ranking in that order. The order was reversed for value added inducement, with Fare and margins (5th), Service (15th), and Goods (24th). Service ranked at the top in employment inducement, with Services (6th), Fare and margins (7th), and Goods (15th).

2) Comparison with Other Industries

Next, we will outline the results for compilation type 3, which consolidates the tourism sector into one (Table 4-4-5). For comparison, we will show the results for Iron and steel, Electrical machinery, and Transportation equipment as well.

For production inducement, the ripple effect was greatest in the order of Transportation equipment, Iron and steel, Electrical machinery, and Tourism, but this order was reversed for value added inducement to Tourism, Electrical machinery, Transportation equipment, and Iron and steel. Looking at the relative sizes, in production inducement, Transportation equipment at the top is about 1.5 times the size of Tourism at the bottom. Conversely, the difference was nearly seven-fold for employment inducement. The inducement effect for employment varied greatly depending on the sector, and we can see that the impact on employment was particularly strong in the tourism industry.

3) The Impact on Employment

Table 4-4-5 Abstract of inducement coefficients based on compilation type 3 (38 sectors)

Production	Gross Value Added	Employment
1st Transportation equipment (2.45)	14th Tourism (0.90)	7th Tourism (0.14)
2nd Iron and steel (2.43)	27th Electrical machinery (0.77)	25th Electrical machinery (0.08)
9th Electrical machinery (1.9)	28th Transportation equipment (0.77)	29th Transportation equipment (0.07)
21st Tourism (1.68)	28th Iron and steel (0.75)	33rd Iron and steel (0.02)

Source: Estimated by the author.

In Table 4-4-5, we saw that tourism's impact on employment is relatively great. Next, we will sort employment into the employment types of "Self-employed worker and Family worker," "Regular employee," and "Non-regular employee" and calculate the inducement for each. Here, non-regular employee is defined as the sum of "Non-regular employees/staff" and "Temporary employees" among the full-time employees in the employment table. Figure 4-4-1 shows the employment ripple effect by employment type, with the average of manufacturing added in addition to the industries in Table 4-4-5[4]. What is notable for Tourism is that inducement for non-regular employees accounts for 36%, which is higher than the 22% as the average of manufacturing. In Japan, regular employ-

4) The average of manufacturing is the simple average of 18 manufacturing sectors.

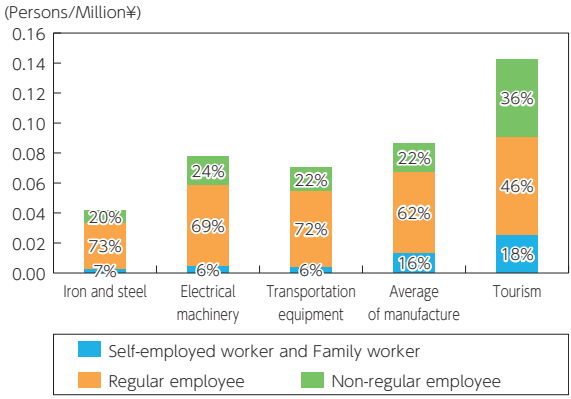

Figure 4-4-1 Ripple effect on employment by employment type

Source: Estimated by the author.

ees increased by 330,000 while non-regular employees decreased by 970,000 on average in FY 2020. We can see from here also that the decreased demand for tourism due to the COVID-19 pandemic had a direct impact on non-regular employees.

(3) Summary: Characteristics of the Tourism Industry

Thus far, we have outlined the characteristics of the tourism industry nationwide based on TSA. According to the most recent TSA available, tourism consumption in 2018 was JPY 27,431 billion, of which, approximately 20% was consumption by foreigners visiting Japan and 80% by Japanese citizens. Expenditure on goods was around 30% for both, and the rest was service expenditure, with expenditure particularly high in the accommodation services and food- and beverage-serving services. However, the percentage of tourism consumption in domestic supply (tourism ratio) differed, with approximately 90% for accommodation services and 14% for food- and beverage-serving services. Tourism GDP remained around 2% of the total in the late 2010s.

We also combined the 2017 Extended Tables and the TSA to create an input-output table separating out the tourism sector and measured the relative size of the economic ripple effect of the tourism industry. The production inducement coefficients of the tourism industry was 21st, ranking low among the 36 sectors (excluding activities not elsewhere classified and office supplies), but it ranked higher in the inducement coefficient for value added (14th) and the inducement for employment (7th). The tourism industry falls short of manufacturing in terms of the production ripple effect, but it exceeds manufacturing

for the ripple effect on value added and employment, particularly employment. Additionally, in terms of employment, we saw that the impact on non-regular employment was particularly great, relatively. This suggests that the impact of COVID-19 pandemic on non-regular employment has been more serious.

3. The Tourism Industry in Kansai: Analysis Based on the 2015 Table for Each Prefecture

When considering what's on the horizon for Kansai, the tourism industry is very important for it, with the Expo 2025 Osaka, Kansai, Japan to be held in 2025, among other things. In the previous subsection, we discussed the importance of the tourism industry based on the input-output tables for Japan. In this subsection, we will use the input-output tables for each prefecture to examine the characteristics of the tourism industry in Kansai's economy.

The main analysis method is as follows. First, we will look at the characteristics in terms of the scale of the tourism industry within Kansai's economy. Then, we will look at the economic ripple effect of the tourism industry based on the production/employment inducement coefficients and the diversity of industries that are affected by the economic ripple effect.

(1) Characteristics of the Tourism Industry in Each Prefecture

In this subsection we will examine the tourism industry in 10 prefectures in Kansai, but since the consumption trend of domestic tourists is not clearly indicated by prefecture in the statistics publications, it is difficult to separate sectors associated with tourism in the input-output tables to analyze the tourism industry, as we did nationally. In general, when analyzing the tourism industry in prefectures using input-output tables, the economic ripple effect is often examined by associating existing industry sectors with tourism sectors. The input-output table, due to its structure, assumes that if there is no difference in quality and that the input structure is the same, so the accommodation industry is considered to conduct similar production regardless of whether its purpose is tourism or non-tourism. Thus, in this section we will follow the methods of earlier studies and associate the TSA tourism industry sectors with the industry sectors in the input-output tables of the 10 prefectures.

First, Table 4-4-6 shows the association between the industrial classification by the TSA, the common industrial classification, and the input-output table of each prefecture.

The industrial classification by the TSA consists of Accommodation services for visitors, Vacation home ownership (imputed), Food- and beverage-serving,

Table 4-4-6 Tourism industry in TSA and industries in the input-output table

	Industrial Classification by TSA	Industrial Classification by SNA	Industrial Classification (Input-Output Table, Osaka)
Tourism Industry	Accommodation services for visitors	Accommodations	Hotels
	Vacation home ownership (imputed)	Real estate lessors	–
	Food- and beverage-serving services	Eating and drinking services	Eating and drinking services
	Railway passenger transport services	Railway passenger transport	Railway transport
	Road passenger transport services	Road passenger transport	Road freight transport (except self-transport)
	Water passenger transport services	Water transport	Water transport
	Air passenger transport services	Air transport	Air transport
	Services relating to transport	Other transport	Services relating to transport
	Sports and recreational services	Services for amusement and hobbies	Amusement and recreational services
	Other services	Services, N.E.C	–

Source: Created by the author.

Railway passenger transport services, Road passenger transport services, Water passenger transport, Air passenger transport services, Services relating to transport, Sports and recreational services, and Other services. These industries are mostly classified as those that produce tourism-specific products and that cannot exist without tourists or the consumption level drops significantly without them, and they are believed to play a central role in the tourism industry[5]. Associations of these industries with the common industrial classifications by the SNA are listed in the center column, and the right column shows the associations with the industrial classifications by the input-output table[6]. Of these industrial classifications, we targeted the five sectors with relatively high domestic tourism expenditure in Table 4-4-1; namely Hotels, Eating and drinking services, Amusement and recreational services, Railway transport, and Road freight transport (except self-transport) (described according to classification in input-output table, hereinafter referred to as the "Five tourism industry

5) To ascertain the situation in the tourism industry in accordance with international standards, standards for tourism-specific products were presented in the World Tourism Organization's (UNWTO) International Recommendations for Tourism Statistics 2008.
6) For the industrial classifications for Osaka, the medium aggregated classification (107 sectors) from the most recent FY 2015 input-output tables for Osaka were used.

sectors.")[7].

To compare with nationwide, Table 4-4-7 looks at the specialization coefficients based on the production values of the five tourism industry sectors in the national input-output table[8]. Industries and prefectures with a specialization coefficient value of 1.05 or higher are shaded. Looking at the characteristics by prefecture, even in Kyoto, the specialization coefficient is higher than 1 in four sectors except for Amusement and recreational services, and it is particularly high in Hotels and Eating and drinking services. In Hyogo, all five sectors have specialization coefficients higher than 1 but lower than Kyoto in Hotels and Eating and drinking services. By industry, Railway transport and Eating and drinking services were high mainly in Osaka and Kyoto. Road freight transport (except self-transport) is higher in areas where automobiles are used more than railway (rural areas). Hotels were high in Kyoto and Tottori, followed by Wakayama and Fukui[9]. Amusement and recreational services was below the national average in all prefectures except in Hyogo and Tokushima. Thus, we can see that in the tourism industry in the Kansai economy, the weights of Hotels and Eating and drinking services are higher than nationwide.

Table 4-4-7 Specialization coefficients by prefecture for the five tourism industry sectors

Nationwide=1

	Fukui	Mie	Shiga	Kyoto	Osaka	Hyogo	Nara	Wakayama	Tottori	Tokushima
Railway transport	0.16	0.60	0.59	1.65	1.51	1.05	1.18	0.31	0.28	0.12
Road freight transport (except self-transport)	1.18	0.85	0.77	1.07	1.06	1.41	0.86	0.92	1.14	1.29
Hotels	1.32	1.00	0.72	1.91	0.91	1.19	0.66	1.36	1.94	1.09
Eating and drinking services	1.15	0.74	0.59	1.37	1.22	1.16	1.12	0.76	1.02	0.44
Amusement and recreational services	0.65	0.75	0.66	0.94	0.98	1.09	0.95	0.67	0.84	2.56
GRP (Billion¥)	5,959	19,269	12,381	18,002	67,148	38,959	6,194	7,356	3,252	5,076

Source: Estimated by the author.

7) Since Air transport is normally a means to travel to a destination and is generally expected to be excluded from consumption by tourists visiting Kansai, it is not analyzed.
8) Specialization coefficient describes how specialized an industry of a prefecture is and compares the ratio of the production value of an industry of a prefecture with the national ratio. Thus, if it exceeds 1, it indicates that the production value is great in that industry sector compared to nationally.
9) In many of these prefectures, the impact of hot springs resorts as tourism accommodation is believed to be significant.

(2) Size of Employment Inducement and Impact on a Wide Range of Industries

Next, we will examine the characteristics of the economic ripple effect of the tourism industry from the perspective of production and employment inducement coefficients and which industries are affected by the economic ripple effect.

1) Inducement Coefficient for Production/Employment

As in the previous subsection, we will calculate the inducement coefficients for production and employment for the five tourism industries by prefecture. The production inducement coefficient caused by an industry is defined as the inducement on production in the overall economy when final demand for the relevant industry increases by one unit. The results are shown in Table 4-4-8. The production inducement coefficient and the ranking in the prefecture by industry, and the employment inducement coefficient and the ranking in the prefecture by industry, are listed by industry and by prefecture. Since the medium aggregated classifications are used in the input-output table of the prefectures, the total number of sectors is between 103 sectors (Fukui) and 108 sectors (Nara, Tottori, Tokushima), and the rankings show the relative sizes of the economic ripple effect in the region. Additionally, the shaded area in the box indicating the rankings indicates a case that exceeds the rankings of the production-induced coefficient and the employment-induced coefficient.

First, looking at the characteristics of the production inducement coefficient by industry, the rankings of the prefectures for Hotels and Eating and drinking services were between 9th (Shiga) and 23rd (Tokushima), and 15th (Kyoto) and 48th (Mie) respectively, indicating that they are industries with a high production inducement. The coefficient values were also 1.3 or higher in Hotels and Eating and drinking services and approximately 0.1 point higher than Railway transport, Road freight transport (except self-transport), and Amusement and recreational services. On the other hand, Road freight transport (except self-transport) was quite low, between 92nd (Fukui) and 100th (Tokushima)[10]. Looking at the characteristics by prefecture, Railway transport's production inducement was relatively high in Fukui, Shiga, Kyoto, and Hyogo, while it was around the middle in Mie, Osaka, and Tottori. Additionally, for Eating and drinking services, Mie was 48th, ranking low compared to other prefectures, while for

10) Since the medium classifications are used for Road freight transport (except self-transport) for both the production inducement effect and employment effect, it may have been more impacted by "road freight" than "road passenger."

Table 4-4-8 Production inducement coefficients, employment inducement coefficient and ranking

	Railway transport				Road freight transport (except self-transport)			
	Production	(Rank)	Employment	(Rank)	Production	(Rank)	Employment	(Rank)
Fukui	1.313	(32)	0.183	(11)	1.179	(92)	0.113	(32)
Mie	1.213	(68)	0.053	(56)	1.125	(93)	0.124	(18)
Shiga	1.291	(23)	0.046	(62)	1.141	(97)	0.160	(15)
Kyoto	1.305	(23)	0.042	(82)	1.145	(97)	0.163	(19)
Osaka	1.248	(65)	0.042	(76)	1.179	(96)	0.150	(9)
Hyogo	1.282	(39)	0.038	(79)	1.154	(96)	0.123	(17)
Nara	1.220	(54)	0.064	(60)	1.130	(94)	0.155	(20)
Wakayama	1.264	(52)	0.111	(28)	1.182	(83)	0.141	(16)
Tottori	1.272	(65)	0.080	(62)	1.158	(96)	0.139	(28)
Tokushima	1.229	(57)	0.122	(31)	1.108	(100)	0.105	(45)

	Hotels				Eating and drinking services			
	Production	(Rank)	Employment	(Rank)	Production	(Rank)	Employment	(Rank)
Fukui	1.493	(11)	0.190	(8)	1.349	(24)	0.169	(14)
Mie	1.335	(22)	0.110	(20)	1.262	(48)	0.169	(9)
Shiga	1.389	(9)	0.159	(16)	1.320	(17)	0.181	(11)
Kyoto	1.403	(11)	0.140	(27)	1.370	(15)	0.405	(4)
Osaka	1.387	(21)	0.111	(24)	1.367	(23)	0.164	(7)
Hyogo	1.362	(16)	0.110	(22)	1.336	(24)	0.192	(4)
Nara	1.320	(13)	0.300	(4)	1.258	(30)	0.248	(5)
Wakayama	1.428	(19)	0.168	(7)	1.348	(26)	0.228	(5)
Tottori	1.413	(20)	0.206	(10)	1.376	(25)	0.228	(8)
Tokushima	1.314	(23)	0.161	(18)	1.286	(29)	0.270	(4)

	Amusement and recreational services			
	Production	(Rank)	Employment	(Rank)
Fukui	1.303	(36)	0.128	(25)
Mie	1.144	(88)	0.123	(19)
Shiga	1.210	(62)	0.128	(21)
Kyoto	1.239	(51)	0.126	(31)
Osaka	1.229	(73)	0.105	(26)
Hyogo	1.201	(86)	0.092	(30)
Nara	1.203	(66)	0.156	(19)
Wakayama	1.229	(66)	0.126	(20)
Tottori	1.274	(64)	0.125	(34)
Tokushima	1.211	(71)	0.106	(43)

Source: Estimated by the author.

Amusement and recreational services, Fukui ranked high at 36th.

Next, in terms of the employment inducement coefficient, Kyoto, Hyogo, and Tokushima were 4th for Eating and drinking services and the lowest rank was Fukui's at 14th, which indicates that it is an industry with a relatively high employment effect. Additionally, Hotels was between 4th (Nara) and 27th (Kyoto), with results similar to Eating and drinking services. Amusement and recreational services was slightly lower than Eating and drinking services and Hotels, but it was generally around the 20th to 40th range, indicating that the employment effect is relatively high. Meanwhile, the employment effect varied in Railway transport and Road freight transport (except self-transport). The former ranked quite high at 11th in Fukui, but Osaka (76th), Hyogo (79th), and Kyoto (82nd) show that the regional gap is large. The latter was generally high except for Fukui (32nd) and Tokushima (45th).

Lastly, we look at the differences in rankings between the production inducement coefficient and the employment inducement coefficient. In Hotels, which ranked relatively high for the production inducement coefficient to start with, the rankings for the employment inducement coefficient were slightly lower in Shiga, Kyoto, and Hyogo but were more or less the same, showing that both its production inducement effect and employment coefficient are high. Similarly, in Eating and drinking services where the production inducement coefficient was high, employment inducement coefficient rankings were even higher in all prefectures, with results similar to the analysis in the previous section. From these results, we can see that in Hotels and Eating and drinking services in particular, there is the strong tendency for not only production inducement, but also employment inducement to be high.

2) Which Industries are Affected by the Economic Ripple Effect?

Lastly, we will look at which industries are affected by the economic ripple effect. A greater economic ripple effect is more desirable, but even if the economic ripple effect is great, if it only affects certain industries, the effect on the overall region will be localized. Conversely, if it affects various industries, the effect on the overall region will be broad. Thus, of the five tourism industries, we will focus on Hotels, which had a high influence coefficient in the previous subsection, and examine its impact on other industries. In so doing, we will compare it with electrical machinery, which is one of the main industries in Kansai. The values excluding the production ripple effects to the industry concerned and summarized into nine sectors are represented in Figure 4-4-2.

Hotels was highest in Fukui at 0.493 and lowest in Tokushima at 0.282. The impact on other industries was relatively great in the three sectors of Electricity, gas and heat supply, Transport and postal service, and Service, but Agriculture,

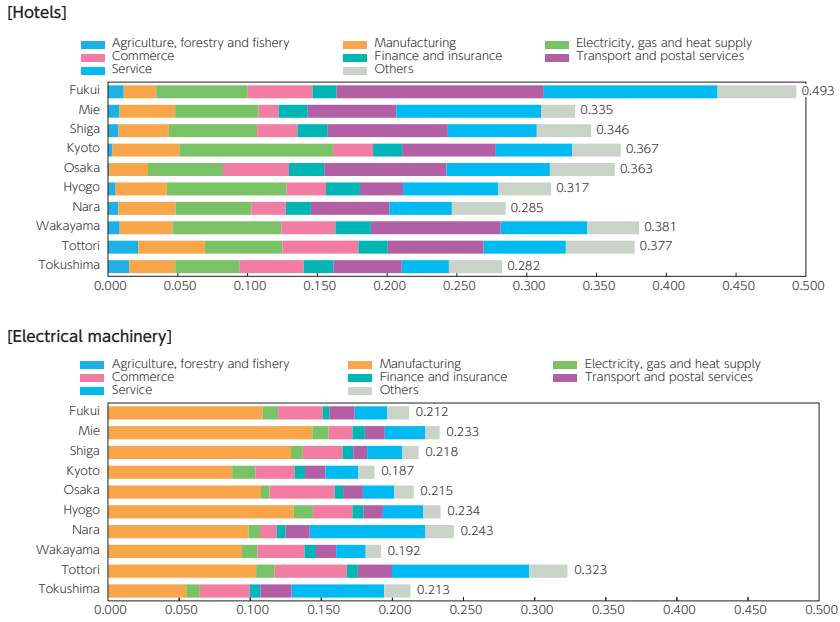

Figure 4-4-2 Production inducement destination of Hotels (excluding inducement to own industry)

Source: Estimated by the author.

forestry and fishery, Commerce, and Finance and insurance were also somewhat impacted. On the other hand, in Electrical machinery, which is a key industry in Kansai, the impact on other industries excluding the value for the industry concerned was small among the prefectures compared to Hotels, with Tottori's being the highest at 0.323 and Kyoto's the lowest at 0.187. Looking at the impact on other industries, it was mostly in the manufacturing industry and the impact on other industries was around half.

(4) Summary: Characteristics of the Tourism Industry in the 10 Kansai Prefectures

In this subsection, we looked at the characteristics of the tourism industry in the Kansai economy using the latest input-output tables for the 10 Kansai prefectures. As a result, we saw that 1) in the tourism industry in the Kansai economy, the importance of Hotels and Eating and drinking services is high compared to nationwide, 2) it strongly impacts other industries, mainly Hotels, in the region and can generate earnings from other regions, and therefore is a very important industry for each region, and 3) the economic ripple effect does not only affect

certain industries but also affects various industries, and its impact on the overall region is broad. Thus, the importance of the tourism industry in the Kansai economy has been clarified.

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