

**Airport Choice in Mega-City:
Economic Evaluation of Utility from Airports
in Metropolitan Tokyo Area**

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Abstract

This paper presents an empirical analysis of airport choice and passenger movement for passengers living in the Tokyo metropolitan area. The data on which this analysis is based are from a 2010 survey that was conducted for the first time since slots for international long-haul flights were assigned to the Haneda. The analysis found a gap in the access costs between Haneda and Narita that is equivalent to the gap of economic value of unobservable utility of airports. In addition, it is confirmed that accessibility to the final destination is a crucial element for airport choice, and Japanese airlines were found to successfully attract passengers by making use of Haneda.

Keywords: dual-airport policy, probit model, indifferent point, economic evaluation, utility, Haneda, Narita

1. Introduction

The demand for air transportation among mega-cities is drastically increasing worldwide. Therefore, it is very difficult for a large city to accommodate all of the demand with a single airport. For example, heavy congestion causes frequent delays in Beijing International Airport, which handles almost all air traffic demand in the area, and it raises a strong need to build a new airport. In this context, there are multiple airports in most large cities in the world to accommodate the increasing demand. Above all, we can observe the rapid increase in the Asia region, and there have been multiple airports in Tokyo over time. Since 1978, when Narita Airport opened in Tokyo, Haneda Airport has been used for most domestic flights, and Narita Airport has been for most international flights. However, the recent increasing demand for international flights has led to a change in Haneda's role, and the international flight network from Haneda has expanded.

It is rare to see multiple airports similar in scale and function in one city. Generally, there is one airport near the downtown area with more restrictions and another airport in the suburb with fewer restrictions. Haneda, located near the downtown area, now serves for international flights under slot constraints, even though its international flight network is expanding. On the contrary, Narita has more flights, destinations and airlines than Haneda to allow passengers various options, although it has a certain restriction for operation hours in early morning and in the middle of the night.

When an inter-city competition becomes harder, particularly in the Asia region, it is time to consider how multiple airports should be operated tactically, that is the "Dual Airport Policy". This policy relates to how each airport, with different functions, should have its original roles and compete with each other. In this context, it is so important to provide a quantitative evaluation of the economic value of accessibility, which is equivalent to the utility obtained from the airport. We understand that accessibility does not necessarily mean only proximity to airport but includes the convenience of the entire journey to one's final destination. Based on this premise, our paper focuses on the portion of access to the departure airport, as shown in Table-1.

We assume that passengers might choose Narita rather than Haneda if the access time to the airports from the departure point is same due to the greater variety of options, such as airlines, flights and schedules, that were available in Narita in 2010. There might be the point that the choice probability for Narita and Haneda is indifferent if the gap in the access time to each airport reaches a certain level. The gap, which is the difference in the time cost, can be recognized as the economic value for unobservable utility obtained from the airport.

Therefore, we conducted an empirical analysis of the airport choice behavior of passengers on an international flight in the Metropolitan Tokyo Area, Japan with the International Air-traffic Passenger Movement Survey (2010) by JMLIT to assess the economic value of utility obtained from the airport. We adopted a probit model to analyze the airport choice behavior based on the sample by

the final destination (short-haul or long-haul) and whether a direct flight was available from the selected airport. Followed by the estimations, we found the indifferent point; that is, the gap in the access time in the choice probability for Narita/Haneda shows 50 percent of passengers to be indifferent. Related to the indifferent point, several previous studies refer to the concept of thresholds in transportation-related research. Krishnan (1977)¹ is a pioneer and one of the notable researchers in this field, but it is not the main objective of our research to find an indifferent point itself. This would help us to assess the economic value of utility obtained from an airport. In addition, it would provide implications to consider how the two airports in Metropolitan Tokyo area should be served to maximize the public welfare.

There has been a great deal of research on airport choice, but most has focused on passenger choice in a multi-airport region. For example, many studies are based on data from a survey conducted by the Metropolitan Transport Commission in the San Francisco Bay Area (San Francisco, San Jose, and Oakland) in the United States. Harvey (1987), Pels et al. (2001, 2003), Basar and Bhat (2004), Hess and Polak (2005), Ishii et al. (2009) conducted empirical analyses of airport choice. Harvey (1987) found, via a multinomial logit model, that the ground access time and frequency of direct air service to the chosen destination were critical factors for passengers to create their variations in airport usage patterns, thus highlighting the importance of the planning of accessibility to airports to deploy a multiple airport system. Ishii et al. (2009) found, via a conditional logit model, that non-price characteristics such as access time, flight frequency and availability of particular airport-airline combination have strong effects on passengers' airport choice. In addition to data on the San Francisco Bay Area, Hess et al. (2007) utilized nationwide data collected in a US domestic trip and used nested logit and multinomial logit models to find that airfare, access time, flight time and allegiances for airlines and airports had significant effects on passengers' airport and airline choice behavior.

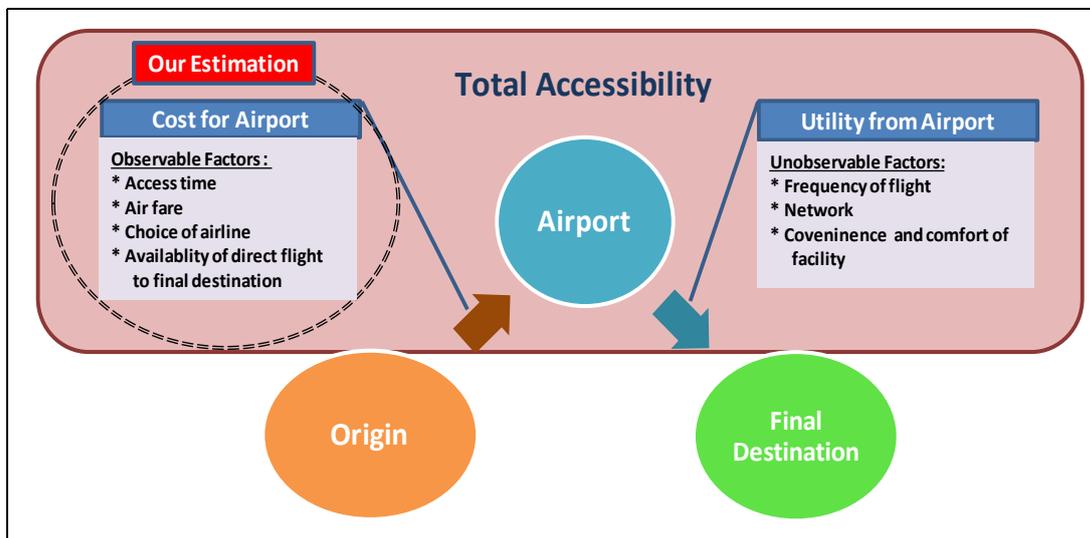
In Europe, Hess and Polak (2006) utilized data in the Greater London area and found, via a nested logit model and multinomial logit model, that access time, access cost, flight frequency and flight time had strong influences on passengers' airport choice. Tsamboulas and Nikoleris (2008) utilized the data in Athens and revealed that 49 percent of public transport users for the Athens airport had a willingness to pay approximately 1.60€ if their access time could be reduced by 25 percent. In Asia, Loo et al. (2005) and Loo (2008) examined the Pearl River Delta Area (Hong Kong, Guangzhou, Shenzhen, Zhuhai, and Macau). Loo (2008) used a stated preference methodology to assess the factors related to airport choice based on surveys conducted in Hong Kong International Airport. In these studies, travel time to an airport, fare, flight frequency, number of airlines, and personal attributes were used as independent variables.

In Japan, Furuichi and Koppelman (1994) utilized data from 1989 and found, via a nested

¹ We can also find useful implications for a concept of threshold in Cantillo et al. (2005, 2006 and 2010).

logit model to find airport choice modelling for the four international airports—Narita, Osaka, Nagoya and Fukuoka²—that access time was highly appreciated by both business and leisure travelers. Now, the Tokyo metropolitan area is a dual-airport region; the function of the two airports has been divided. Therefore, there has not been an empirical analysis of the airport choice issue between Narita and Haneda as international points of departure for passengers living in the Metropolitan Tokyo area. This study investigates how Narita and Haneda were chosen as departure airports since long-haul international flights became available from Haneda to understand the implications to build a reciprocal relationship between the two airports.

Table-1: Concept of cost and utility in our paper



Source: Authors

2. Hypothesis

At the time of data collection in 2010, when there were more options for flights departing from Narita rather than from Haneda, passengers might have chosen Narita if they spent the same amount of time reaching the airport. We can say that a certain gap in the travel time to each airport should be the point at which the probability of airport choice becomes indifferent. Therefore, the gap in the cost of time for passengers can be recognized as the economic value for utility obtained from an airport.

We intentionally excluded a variable of “airfare” from our estimation because we were not able to ensure the accuracy. First of all, passengers are required to report their total paid amount,

² In 1989, Haneda was not open for regular international flights, except for China Airlines (ROC), due to the political background to distinguish from airlines of PRC. Osaka refers to Itami airport, as Kansai airport was opened in 1994, and Nagoya refers to Komaki airport, as Chubu Airport was opened in 2005.

including airport taxes and fuel surcharge. In addition, the survey requests that passengers traveling by group package tour report their total tour price. This means that it is impossible to extract a genuine airfare and details of the ticket category that is a normal full fare or various types of discounted fare. Furthermore, the answer is based on the memory of passengers; therefore, it is not suitable to utilize “airfare” in our estimation.

3. Method

The following premises were analyzed using an econometric random utility model. When U_i^m is the utility for individual passenger (i), and when (i) chooses an airport (m) between two alternatives (Haneda and Narita), the relationship can be denoted as following:

$$U_i^m = \mathbf{x}_i^m \boldsymbol{\beta} + \epsilon_i^m$$

\mathbf{x}_i^m denotes a vector of characteristics that influence the choice of airport, $\boldsymbol{\beta}$ denotes the coefficient vector, and ϵ_i^m denotes the random disturbance term. The utility of an alternative depends on its attributes, including individual characteristics. Theoretically, we can say that an individual maximizes his utility when choosing an alternative from a given choice set. Therefore, (i) chooses (m) when airport (m) provides him with higher utility than airport (n). This implies the following;

$$P_i^m = \text{Prob}[U_i^m \geq U_i^n; m \neq n] = \text{Prob}[\mathbf{x}_i^m \boldsymbol{\beta} + \epsilon_i^m \geq \mathbf{x}_i^n \boldsymbol{\beta} + \epsilon_i^n; m \neq n]$$

The conditional probability of the choice of airport (P_i^m), given its attributes and the characteristics of the individual, can be represented by the probability of the utility greater than the alternative. This paper analyzes the profiles of international airline passengers living in the Metropolitan Tokyo Area departing from Narita and Haneda.

3.1 Empirical Model

Based on the idea of a random utility model, we specify an empirical model as follows:

$$y_i^m = \beta_0^m + \sum_{k=1}^K \beta_k^m X_{i,k}^m + u_i,$$

where i represents each individual sample ($i=1, \dots, n$), β^m are unknown parameters to be estimated, y_i^m is an dependent variable, $X_{i,k}^m$ are k of independent variables, which affect airport choice, and u_i is an error term. The dependent variable y_i^m is designated as 1 if an individual i chooses Narita airport and y_i^m is designated as 0 if an individual i chooses Haneda airport. The independent variables $X_{i,k}^m$ are dummy variables: Direct Flight from Haneda, Direct Flight from Narita, Class, Airline (JAL, ANA), Purpose (Business Trip), and Access Time by public transportation. We obtained the same results by estimations with access time by car and distance to each airport as substitutes for access time by public transportation. We particularly focus on public transportation because it is very common in Metropolitan Tokyo to use public transportation to access both Narita and Haneda. The variable of Access Time by public transportation is derived from the gap between one's access time to the two airports by public transportation, the access time to Haneda subtracted

from that of Narita. We estimated eighteen models, each of which is based on the length of flight time and the availability of direct flights from Haneda. Although we conducted the same estimation by the variable of access time by car and distance to each airport, we obtained similar results. Therefore, we discuss and draw implications based on the results by Access Time by public transportation. There were no destinations to which direct flights were available only from Haneda at the time of data collection.

3.2 Data

We utilized the data from the "Survey of International Passenger Movement on Air-transport (2010)," conducted by JMLIT. The survey was conducted at all international airports in Japan on several days in August and November in 2010. We extracted a sample of international passengers living in Metropolitan Tokyo Area departing from Narita and Haneda. The original sample size was 7,217, and responses with missing values were eliminated. We can see the breakdown of the sample in Table-2; the samples can be categorized by a passenger's flight distance and his final destination on a direct flight that was available from both Haneda and Narita. Based on these categories, we conducted 9 estimations.

A description of the variables used for the analysis is provided in Table-3; we set "y" (Narita or Haneda) as the dependent variable and analyzed the effect of 7 independent variables related to airport choice. The descriptive statistics are shown in Table-4.

Table-2: Breakdown of samples

Final Destination Flight Distance	All sample	Destination available both Haneda and Narita	Destination available only from Narita	Destination available only from Haneda
All sample	Yes	Yes	Yes	N/A
Longhaul	Yes	Yes	Yes	N/A
Shorthaul	Yes	Yes	Yes	N/A

Table-3: Description of Variables

Independent Variable	Description
y	Departure airport chosen by a passenger (Narita = 1 , Haneda = 0)
Dependent Variable	Description
Access_Time	The gap of access time by public transportation to each airport from the departure point : (Time to Haneda minus time to Narita)
Airline_JAL	Passenger flying with Japan Airlines (Yes = 1 , No = 0)
Airline_ANA	Passenger flying with All Nippon Airways (Yes = 1 , No = 0)
Class	Travel class (First & Business class = 1, Economy class = 0)
Direct_Flight from Haneda	Direct international flight from Haneda is available to a passenger's destination (Yes = 1 , No = 0)
Direct_Flight from Narita	Direct international flight from Narita is available to a passenger's destination (Yes = 1 , No = 0)
Purpose_Business	Purpose of travel is "Business" (Yes = 1 , No = 0)

Table-4: Descriptive statistics

Variable	Number of Observation	Mean	Std. Dev.	Min	Max
y	6844	0.654	0.476	0	1
Access_Time	6844	-40.371	28.461	-90	76
Airline_JAL	6844	0.356	0.479	0	1
Airline_ANA	6844	0.219	0.414	0	1
Class	6844	0.189	0.392	0	1
Direct_Flight from Haneda	6844	0.651	0.477	0	1
Direct_Flight from Narita	6844	0.905	0.293	0	1
Purpose_Business	6844	0.385	0.487	0	1

4. Results and Discussion

A summary of the results of a probit regression analysis is shown in Tables-5, 6 and 7. In addition, the observations of indifferent points for individual estimations are shown in Tables-8 and 9. The analysis shows that passengers departing from Narita had a longer access time than those from Haneda. For both long-haul and short-haul, we obtained the same result for access time in all estimations. This finding indicates that Haneda is more accessible for most passengers living in the Metropolitan Tokyo area. In relation to this result, we can say that passengers will choose Haneda

when a direct flight is available from Haneda to their final destination. At the same time, when a direct flight is available from Narita to their final destination, passengers will choose Narita; this finding is likely explained by the number of destinations and frequent departures that are served only by that airport. This finding can be explained as one of the utilities that a passenger expects of Narita, and each indifferent point shown on Table-8 shows the costs that it deserves to pay in exchange for utility. We can say that the large gap in the indifferent point between the samples of long-haul flights and of short-haul flights, and between the entire sample and the business-purpose travel samples, indicates an opportunity cost for passengers that varies depending on one's destination and purpose. This observation also shows that passengers would acknowledge longer access time to Narita if a flight to one's final destination was available only from that airport. Furthermore, passengers would be less generous regarding access time if flight was available from Haneda.

When flying with JAL or ANA, passengers are most likely to choose to fly from Haneda. This is consistent with the finding that passengers tend to choose Haneda if a direct flight is available to their destination. However, when focusing on the sample of passengers travelling to the destination available only from Narita, the result is different. We find that passengers flying with JAL tend to choose Narita in the estimation with all and long-haul flights, but they do not with short-haul flights. On the contrary, we find that passengers flying with ANA tend to choose Haneda for short-haul flights. This must reflect the situation that ANA was weaker than JAL for long-haul flights from Narita at the time of the data collection.

Narita is also the airline of choice for passengers traveling in higher service classes. This result is related to the fact that newer and better aircraft with better cabin equipment is deployed for flights from Narita. It must be one of the utilities for passengers to be provided by the airport. This would be more obvious for JAL and ANA in terms of aircraft rotation. Given that Narita is the main hub for the two airlines and that both face severe competition from other airlines, it would be reasonable for them to assign better aircrafts to Narita rather than to Haneda.

The availability of direct flight to the chosen destination from Haneda and Narita has significant effects on the individual airport in the all-passengers estimation. This result implies that passengers tend to choose not Narita but Haneda if a direct flight to his destination is available from Haneda. This tendency might be obvious for short-haul flights.

As expected, a passenger traveling for business tends to choose Haneda. This may reflect the business traveler's choice of better accessibility because the opportunity cost may be lower than Narita. Although it does not have significant effects on Haneda for the short-haul flight sample in the estimation by all passengers and passengers travelling to the destination available from both Haneda and from Narita, it might be affected by the limited numbers of seats, flights and destinations available from Haneda, which would make it difficult for more than a few business-purpose passengers to choose Haneda.

Table-5: Summary of results - 1

<All sample>

Variables	Estimations	All sample	Long-haul	Short-haul
Access Time		0.009*** (0.001)	0.006*** (0.001)	0.012*** (0.001)
Airline_JAL		-0.145*** (0.041)	-0.332*** (0.066)	-0.139** (0.056)
Airline_ANA		-0.206*** (0.046)	-0.300*** (0.077)	-0.305*** (0.063)
Class		0.466*** (0.047)	0.237*** (0.067)	0.216*** (0.076)
Direct_Flight from Haneda		-1.582*** (0.055)	-0.953*** (0.069)	-1.828*** (0.103)
Direct_Flight from Narita		0.615*** (0.080)	0.337*** (0.097)	1.338*** (0.155)
Purpose_Business		-0.199*** (0.036)	-0.113* (0.061)	-0.004 (0.050)
Constant		1.464*** (0.071)	1.719*** (0.098)	0.750*** (0.132)
Observations		6,844	3,535	3,309

Notes:

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table-6: Summary of results - 2

<Sample with passengers travelling to the destination available both from Haneda and from Narita>

Variables	Estimations	All sample	Long-haul	Short-haul
Access Time		0.009*** (0.001)	0.005*** (0.001)	0.012*** (0.001)
Airline_JAL		-0.146*** (0.045)	-0.468*** (0.085)	-0.146** (0.058)
Airline_ANA		-0.202*** (0.051)	-0.447*** (0.094)	-0.291*** (0.066)
Class		0.492*** (0.053)	0.272*** (0.080)	0.217*** (0.079)
Purpose_Business		-0.167*** (0.041)	-0.132* (0.075)	0.027 (0.052)
Constant		0.488*** (0.043)	1.177*** (0.085)	0.248*** (0.054)
Observations		4,454	1,636	2,818

Notes:

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table-7: Summary of results - 3

<Sample with passengers travelling to a destination available only from Narita>

Variables	Estimations	All sample	Long-haul	Short-haul
Access Time		0.009*** (0.002)	0.007*** (0.002)	0.015*** (0.004)
Airline_JAL		0.257*** (0.130)	0.450*** (0.160)	-0.255 (0.288)
Airline_ANA		-0.142 (0.138)	0.163 (0.192)	-0.685** (0.270)
Class		0.191 (0.144)	-0.039 (0.164)	0.758 (0.491)
Purpose_Business		-0.377*** (0.108)	-0.276** (0.134)	-0.487** (0.229)
Constant		2.072*** (0.124)	1.940*** (0.135)	2.708*** (0.339)
Observations		1,740	1,365	375

Notes:

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table-8: Observation of indifferent points to choose the airport

	For All Passenger						For Passenger on Business-purpose					
	All sample		Destination available both Haneda and Narita		Destination available only from Narita		All sample		Destination available both Haneda and Narita		Destination available only from Narita	
	Indifferent Point (Mins)	Probability	Indifferent Point (Mins)	Probability	Indifferent Point (Mins)	Probability	Indifferent Point (Mins)	Probability	Indifferent Point (Mins)	Probability	Indifferent Point (Mins)	Probability
All Sample	Δ 103	0.4998	Δ 47	0.4995	Δ 227	0.4981	Δ 90	0.4967	Δ 33	0.4967	Δ 213	0.4967
	Δ 102	0.5033	Δ 46	0.5030	Δ 226	0.5016	Δ 89	0.5002	Δ 32	0.5034	Δ 212	0.5020
Only Long-haul Flight	Δ 246	0.4997	Δ 166	0.4989	Δ 332	0.4991	Δ 233	0.4983	Δ 152	0.4997	Δ 319	0.4977
	Δ 245	0.5020	Δ 165	0.5011	Δ 331	0.5014	Δ 232	0.5006	Δ 151	0.5020	Δ 318	0.5000
Only Short-haul Flight	Δ 33	0.4954	Δ 14	0.4969	Δ 166	0.4985	Δ 32	0.4992	Δ 14	0.4959	Δ 166	0.4975
	Δ 32	0.5002	Δ 13	0.5016	Δ 165	0.5032	Δ 31	0.5040	Δ 13	0.5007	Δ 165	0.5023

Notes:



There exists the indifferent point between the upper row and lower row.

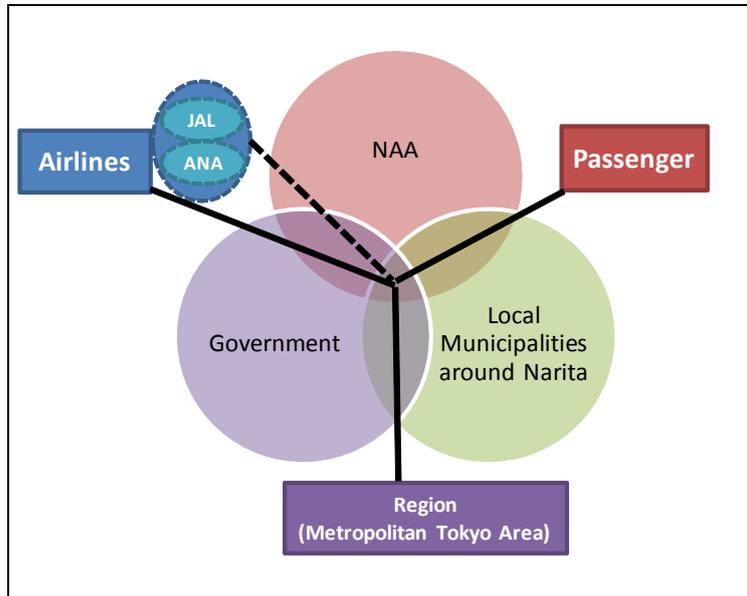
Table-9: Observation of time difference for indifferent point

	All sample			Destination available both Haneda and Narita			Destination available only from Narita		
	(A) For All Passenger (Mins.)	(B) For Passenger on Business-purpose (Mins.)	(B-A) Difference (Mins.)	(C) For All Passenger (Mins.)	(D) For Passenger on Business-purpose (Mins.)	(D-C) Difference (Mins.)	(E) For All Passenger (Mins.)	(F) For Passenger on Business-purpose (Mins.)	(F-E) Difference (Mins.)
All Sample	△102-103	△89-90	△ 13	△46-47	△32-33	△ 14	△226-227	△212-213	△ 14
Only Long-haul Flight	△245-246	△232-233	△ 13	△165-166	△151-152	△ 14	△331-332	△318-319	△ 13
Only Short-haul Flight	△32-33	△31-32	△ 1	△13-14	△13-14	0	△165-166	△165-166	0

5. Conclusion

The results of this study suggest that Haneda has a strong need for passengers in the Metropolitan Tokyo area. For business travelers in particular, Haneda could be more functional and convenient based on the accessibility advantages it offers. It is true that there are still many restrictions in place that prevent Haneda from expanding its international flights. However, JMLIT announced that additional slots had been granted to international flights out of Haneda starting in March 2014. Of an additional 31 international slots per day, 16 were assigned to JAL and ANA, with the remainder going to overseas airlines. Because these additional flights are permitted to have daytime departures, both airlines can improve the flexibility and efficiency of their operations. Daytime departures from Haneda might also have greater utility for passengers. This change in policy will provide the two Japanese airlines, along with other overseas carriers, an opportunity to expand their international network out of Haneda, particularly for long-haul destinations. As mentioned in the introduction, Haneda and Narita are involved in severe intra-airport competition. It is important for the two airports to compete with each other, but at the same time, it is more important to establish a reciprocal relationship between the two airports as the gateway to Tokyo. It will not be easy for the relevant stakeholders (as shown in Table-10) to compromise, but now is the time to consider comprehensive strategies beyond individual interests.

Table-10: Relationship for Stakeholders of Narita and Haneda



Source: Author

For passengers

Based on its historical background, the Japanese government has focused much of its attention and resources on Narita and has been reluctant to expand the international operations at Haneda. This has inconvenienced passengers and, as a result, allowed Incheon to position itself as an international hub in Northeast Asia. Many problems have carried over without constructive solutions. The improvement of accessibility must be one of the symbolic issues among these solutions. When we consider the restrictions in place that prohibit the expansion of Haneda to accommodate increased demand, it is inevitable that passengers will utilize Narita as their primary gateway. Therefore, more incentives must be given for passengers, and the improvement of the accessibility of Narita is crucial. The result of our estimation that shows that passengers tend to choose Narita if direct flights were available only from Narita implies the importance of incentives for passengers to choose Narita. Therefore, Narita should make more efforts to increase exclusive destinations and airlines.

Recently, Narita has been keen to attract low cost carriers (LCCs) to make up the number of passengers who flowed out to Haneda. When we consider the trend that LCCs have been recognized in the Japanese market, and some middle-haul destinations such as Bangkok and Singapore are served by LCCs, there would be opportunities for Narita to expand the network to attract more passengers. It is widely recognized that LCCs tend to set their flight schedule from the early morning to midnight, which often causes flight disruptions, such as delays or cancellations.

When we consider that the need for LCCs is increasing, it is important to provide accessibility with cheap fare and high frequency to meet the needs of passengers travelling on LCCs. In addition, the government now promotes the “open-sky” policy to utilize Narita³ and supports the inauguration of new flights to vitalize Narita; this would create more options for passengers. Therefore, Narita, that is, the Narita International Airport Corporation (NAA), and the Japanese government must strive to improve the accessibility to appeal its convenience by coordinating with public transportation companies and relevant local municipalities.

For airlines

We suggest that incentives to utilize Narita are also important for airlines currently operating from Narita. Our result that the exclusive destinations only from Narita attract passengers highlights the urgency of maintaining and improving the function of Narita. Although it is important for Narita to offer new options for passengers, as we discussed above, it should be more important to maintain current operators, destinations and flight frequencies. It is expected that the number of aircrafts moving through Narita will reach 300,000 in 2014; thus, it would be very important to seek cooperation with airlines, particularly with Japanese airlines. Incentives for JAL and ANA to maintain their functional hub in Narita must be considered. Therefore, it might be the time for NAA to consider intrepid policies, such as a large-scale discount for the landing and facility usage charge. Furthermore, the central government and local municipalities could contribute by reducing taxes and dues for them to maintain the necessary facilities for their operations from Narita. Without their cooperation, the total competitiveness of Tokyo’s airports would be weakened, and the value of the Dual-Airport Policy would also be diminished.

For region (Metropolitan Tokyo area)

As seen in our results, Haneda is more accessible for most passengers living in the Metropolitan Tokyo area; thus, Haneda would be chosen over Narita if all conditions for airlines, destinations and flight frequency were the same. When we consider the limited capacity in Haneda and the demand, which is expected to increase steadily towards 2020, the year of the Olympic Games in Tokyo, a type of affirmative policy by the government to regulate the volume of supply in Haneda by aircraft type with a certain large number of seats or popular destination⁴ might be an option to maximize the utility of Haneda.

At the same time, Narita should consider extending the operation hours, preferably to be open 24 hours. As we discussed previously, when Narita tries to attract LCCs, it is indispensable for LCCs to utilize an airport for as long a time as possible in case of flight disruption. Longer hours would enable not only LLCs but all airlines to set flexible flight schedules and enhance the

³ Japan has the agreement for “open-sky” with 24 countries and 3 areas as of October 2014.

⁴ In Osaka International Airport (Itami), there is the restriction of slots based on aircraft types: 270 times /day for regular jet planes and 170 times for low-noise jet planes as of November 2014. Also, until 2013, the slots for long-haul flights over 1000km had been restricted up to 8 times /day within those of regular jet planes.

efficiency of aircraft rotation. It would also lead to a higher flight frequency and reasonable airfares, thus benefitting customers by providing various options. Although there are still many difficult problems, particularly for the coordination of interests with local municipalities around Narita, the government, together with NAA, should take initiatives to settle conflicts among the stakeholders of airports and extend the operation hours of Narita as soon as possible.

In this context, we must continue to monitor the passenger movement for international flights in the Metropolitan Tokyo area carefully to assess how to build the reciprocal relationship between Haneda and Narita. This will lead to not only maximizing public welfare but also establishing strategic dual-airport policy to keep the economic and political presence of Japan in Northeast Asia.

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