# Spatial Pattern of Chinese Tourist Flows in Japan

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January 2019

Bindan ZENG

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A Dissertation Submitted to
the Graduate School of Life and Environmental Sciences,
the University of Tsukuba
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy in Science
(Doctoral Program in Geoenvironmental Sciences)

Bindan ZENG

## Abstract

Tourist flow has been one of the most important topics in tourism and geography research fields. Considering the importance of Chinese tourists for Japan's inbound tourism, a detailed understanding of patterns and characteristics of Chinese tourist flows in Japan has theoretical and practical significance. The objective of this dissertation is to understand the characteristics and patterns of tourist flows based on the systematic analyses from three levels: destination, itinerary and network. Specifically, taking Chinese tourist flow in Japan as a study object, the research is designed to identify the characteristics of itinerary patterns and network patterns of tourist flows at inter destination level, understand the differences between group inclusive tourist (GIT) flows and free independent tourist (FIT) flows through comparative analyses and analyze factors influencing tourist flow.

Three types of data are collected for the research: public statistic data about Japan's inbound tourism are collected via the website of Japan National Tourism Organization, Ministry of Foreign Affairs and Japan Tourism Agency. Data of GIT flows are collected through a leading online travel group Tongcheng in China and data of FIT flows are collected from travel diaries on two leading online travel websites: Ctrip and Mafengwo. In the process of data analysis, Social Network Analysis is the main method. Analysis of variance (ANOVA), Chi-square analysis and Content analysis are also used in this process.

The most critical theoretical contribution of this study is applying Social Network Analysis to tourist flow research and summarizing spatial patterns of tourist flow from three levels systematically. Moreover, comparative analysis targeting at GIT and FIT flows deepens the understanding for complexity of tourist flow. The specific empirical analysis in this study shows that: (1) The destinations and Chinese tourist flows are mainly concentrated in the central Japan (including Kanto, Chubu and Kinki Region), then the central Hokkaido region and Northern Kyushu region. Spatial distribution of FIT flows is more extensive. (2) Itinerary patterns of tourist flows can be divided into single destination pattern (S1) and multiple destination patterns which include round trip (M1), base camp (M2), regional loop (M3), trip chain (M4) and complex pattern (M5). The complex pattern has the largest number of visited destinations, longest length of stay and highest expense. Comparatively, FIT itineraries own more round trip, base camp and complex pattern but less single destination pattern, regional loop and trip chain pattern. (3)

Destinations are classified into five types: core node, secondary core node, important node, common node and attached node. Destinations with higher hierarchy have higher centrality value and are more likely to have comprehensive functions while destinations with lower hierarchy own single function. Most nodes in FIT network have higher degree centrality than the nodes in GIT network. Fujisan is not ranked within the most important destinations for FITs. Regional key cities and the cities with small international airports are more important to FITs. (4) 232 nodes and 977 ties constitute the Chinese tourist flow network and it can be divided into five sub regions with four different patterns: multi center agglomeration structure, multi center equilibrium structure, single center equilibrium structure and single center agglomeration structure. FIT network has larger size, longer diameter and lower density, showing a looser structure compared to GIT network. GIT network has higher degree centralization compared to FIT network. FIT network comprises five sub regions while GIT network comprises three. In sub region Tohoku and Chugoku-Shikoku Region, only FIT networks exist. Connections between sub regions within FIT network are stronger than GIT network. (5) Factors influencing tourist flow can be categorized into six major sections: cost benefit consideration of travel services, tourist condition, destination characteristics, transportation characteristics, macro environment and unforeseen circumstance. Cost benefit consideration is fundamental for GIT flows while tourist condition is a core factor influencing FIT flows.

**Keywords**: Tourist flow; Itinerary pattern; Network pattern; Spatial pattern; Chinese; Japan

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# I Introduction

## 1.1 Background

Tourist flow has been one of the most important topics in tourism and geography research fields. In addition to the studies on the types, characteristics and influential factors of tourist flow, the spatial patterns (Pearce, 1987), seasonal concentration (Morales, 2003), and forecast of tourist flows (Song and Li, 2008) are the major topics in this field. Tourist flow involves the movement among destinations of people through time and space. Understanding how tourists move through time and space has important implications for infrastructure and transportation development, product development, destination planning and the planning of new attractions, as well as management of the social, environmental and cultural impacts of tourism (Lew and McKercher, 2006).

Chinese outbound tourism keeps increasing and the number of Chinese travelers to Japan reached 6.37 million in 2016. This figure accounted for 26.5% of all foreign visitors to Japan, ranking in the first in terms of number of foreign visitors by country of origin (JTA, 2017). Meanwhile, the spending of Chinese tourists reached 1.48 trillion yen, and accounted for 39.4% of total amount of all foreign visitors' tourism consumption in Japan in 2016. *The Tourism Vision to Support the Future of Japan* announced by the government on March 30, 2016 will make tourism one of the major pillars of the growth strategy of Japan. It includes new goals such as 40 million foreign tourists and 8 trillion yen in spending by foreign tourists in 2020, both twice the results for 2015. Particularly China will be the driver due to recent sharp increase in the number of travelers to Japan and size of consumption amount per person. In recent years, Chinese tourists are interested in not only traditional destinations such as Tokyo and Kyoto, but also other destinations such as Kushiro in East Hokkaido. Against this background, for the future tourism planning and marketing, it is very important to understand the Chinese tourist flows in Japan. Therefore, a detailed understanding of patterns and characteristics of Chinese tourist flows in Japan has theoretical and practical significance.

## 1.2 Literature review

### 1.2.1 Patterns of tourist flow

Since Williams and Zelinsky (1970) initially attempted at uncovering a few major patterns of

tourist flows among a selected group of countries which dominated the international tourist market, patterns of tourist flows have received a great amount of attention from scholars. The patterns can be explaining at different scales, such as global, national, regional and local destination.

At the macro level, tourists travel from the generating region to destinations or between destination regions. Gunn (1972) was one of the first to discuss different forms of trips: the 'Destination' trip and the 'Touring' trip. Pearce (1987) studied spatial patterns of package tourism in Europe which include intra-Europe patterns of inclusive tours charter traffic and sub- national patterns of package tourism.

At inter destination level, Mings and McHugh (1992) identified four types of trip configurations: Direct Route, Partial Orbit, Full Orbit, and Fly/Drive. Lue et al. (1993) proposed five distinctive spatial patterns that may be adopted by pleasure travelers: single destination, en route, base camp, regional tour and trip chaining. This trip pattern conceptualization put forth by Lue et al. (1993) was proved to be a useful method for classifying, analyzing, and describing the travel patterns (Stewart and Vogt, 1997). Oppermann (1995) proposed a more specific framework to exploring intra national and international travel itineraries, which distinguishes five main types of travel patterns: single-destination trip Sl, base camp S2, destination area loop M3, open jaw loop M4, and multiple destination area loop M5. Flogenfeldt (1999) identified four types of patterns taken by Norwegians: day trip, resort trip, based holiday and round trip. Ryan and Gu (2007) conducted a study of a desired itinerary among students in New Zealand and China and identified two ideal itinerary patterns: open-jaw route and overlaying triangular route. Lau and Mckercher (2007) summarized the movement patterns into six categories: single point, base site, stopover, chaining loop, destination region loop and complex neighborhood.

At the intra destination level, Lew and Mckercher (2006) developed the intra destination movement patterns deductively in two dimensions: four types of territorial patterns (no movement, convenience-based movement, concentric exploration and unrestricted destination-wide movement) and three types of linear path patterns (point-to-point patterns, circular patterns and complex patterns). Mckercher and Lau (2008) examined the daily movements of tourists in Hong Kong and identified total 78 discrete movement patterns which can be categorized into 11 movement styles.

At a more micro level—intra attraction level, Huang and Wu (2012) studied the tourist

spatial-temporal behavior patterns using the concept of the space–time path of time geography. The research results of the Summer Palace case study revealed seven clusters of spatial-temporal behavior patterns.

In addition, based on the tourist flow patterns, different function of destination and different types of tourists are analyzed. Lew and Mckercher (2002) examined the role of destination and proposed places can exhibit characteristics of one or more destination types depending on their location within the overall trip itinerary: Single Destination, Gateway Destination, Egress Destination, Touring Destination, or Hub Destination. Mckercher et al. (2006) identified six different activity styles of tourists within a destination. Three patterns are noted among main destination visitors: the Wanderer, the Tour-taker and the Pre-Planner. Likewise, three different patterns are identified among the cohort of stopover or secondary destination visitors: the Explorer, Uncommitted and the Intimidated.

### 1.2.2 Measurement of tourist flow

A variety of techniques have been applied in analysis of tourist flow. Traditional methods tracking tourist flow relied on observations, interviews, post-visit questionnaires, recall maps or movement diaries (Leung et al., 2012; East et al., 2017). These methods are burdensome to both tourists and researchers, and they often lack needed accuracy (Hallo et al. 2012). Global positioning system (GPS) provides new ways for collecting information about travel behavior (Draijer et al., 2000). It offers advantages over traditional methods for tracking visitors, including more reliable, accurate, and precise data (Hallo et al., 2012). GPS data can be used to identify spatial and temporal travel patterns and distribution of visitors (Beeco et al., 2013). Recently studies have shown GPS is mainly viable in large attractions such as theme parks but has difficulties in gaining a large sample size (East et al., 2017). In addition, when more and more tourists use internet to obtain travel information, share travel diaries and photographs, the online user-generated content is used by researchers. For example, Leung et al. (2012) examined 500 online trip diaries for identifying tourist movement pattern. Vu et al. (2015) introduced a framework for extracting geographical information from geo tagged photos posted online to identify the travel behaviors of tourists and travel route.

As for methodological techniques, network analysis (Hwang et al., 2006), cluster analysis (Asakura and Iryo, 2007), Markov chains (Xia et al., 2009), logistic-regression and general

log-linear models (Xia et al., 2010) have been employed to analyze the tourist flow. Regional economics, physics theory, metering statistics and other related methods also have been adopted. Geographic Information System (GIS) Analysis has been a very powerful tool to map tourist flow data and movement patterns (Lau and Mckercher, 2007; Connell and Page, 2008; Palomares et al., 2015; East et al., 2017). In recent years, scholars have begun to apply the Social Network Analysis method in research regarding tourism planning, marketing, stakeholders and online networks (Peng et al., 2016).

### 1.2.3 Application of Social Network Analysis in tourism research

Social Network Analysis (SNA) is a method used to map and measure relationships and flows between people, groups, organizations, and other connected information/knowledge entities (Wasserman and Faust, 1994). Based on graph theory, SNA can describe the structure of relations (displayed by links) between given entities (displayed by nodes), and applies quantitative techniques to produce relevant indicators and results for studying the characteristics of a whole network and the position of individuals in the network structure (Shih, 2006). Although SNA is most applied in sociological research, it has been introduced into tourism, and hospitality research. Three research streams could be identified with studies applying SNA in the tourism contexts: network analysis on tourism research collaboration and knowledge creation; network analysis on the tourism supply, destination, and policy systems; and network analysis based on tourist movements and behavioral patterns (Liu et al., 2017).

In the specific context of destination network and tourist flow, if destinations are viewed as nodes of a network and tourism routes as links among destinations or nodes, SNA methodological tools can be used to classify destinations by a set of metrics, measure relationships among tourism destinations and to describe their network features (D'Agata et al., 2013). Based on this, Shih (2006) investigated network characteristics of drive tourism destinations in Nantou, Taiwan. Hwang et al. (2006) studied multicity trip patterns within the US by international tourists. Liu et al. (2012) revealed the roles and functions of destinations from tourist flow network's perspective by using centrality indicators and structural equivalence model. D'Agata et al. (2013) proposed an application of Network Analysis to study tourism mobility from individual routes, examining effects both on the single destinations and the whole tourism system in Sicily, Italy. Asero et al. (2016) constructed a tourism network through tourist mobility and explored the network

characteristics using centrality measures, ego-networks and structural equivalence indicators; the results show that the tourists' choice defined the role of a destination as 'central' or 'peripheral' within a network.

There are also several related studies conducted in China in recent years. Some topics are studied from the SNA perspective: Urban tourism in Nanjing city (Yang et al., 2007), inbound tourists flows in Beijing and Shanghai (Wu and Pan, 2010), inbound tourist flows in Guangzhou city (Wang et al., 2013), inbound European tourist flow network in China (Wang et al., 2013), the rules and roles of the destination cities in China's inbound foreigner tourist flow network (Wu et al., 2014). Furthermore, Liu et al. (2017) explored how the tourist attractions network in a regional tourism destination was formed using relationship as a mechanism by applying Quadratic Assignment Procedure in SNA. In Japan, Zhang (2013, 2014) initially introduced the usefulness of SNA for tourism studies. However, there has no research in tourist flow using SNA in Japan up to now.

The studies have shown its advantages in tourism research. Firstly, when applied in studies on tourist flow patterns, SNA has function to visualize travel flow data which can reflect destinations (nodes) themselves and the relationships in and among them. Secondly, SNA can offer numerous techniques and indicators (Centrality, Structural holes, Cliques, etc.) to measure the links among nodes and demonstrate the structural patterns of connected systems. For instance, this methodology is useful for investigating the network features of multiple destinations and thereby, to specify both the relevant and the marginal destinations by their centrality within the routes. (D'Agata et al., 2013).

### 1.2.4 Chinese travel to Japan

In spite of its significant contribution to Japan's tourism industry, Chinese travel has not yet been analyzed comprehensively. Recent studies of Chinese travel to Japan concentrated on followings:

(1) Motivation and decision of Chinese tourists to Japan. Ye (2013) conducted an exploratory empirical research on factors influencing Chinese travels to Japan and found that sightseeing, leisure, social interaction and learning are the main push factors while environment, resources, shopping and culture are the main pull factors. Guo et al. (2015) did an exploratory study on the travel intentions of mainland Chinese residents to Japan after Diaoyu Islands political crisis and

found that political relations between China and Japan are very important for tourists. Jin (2015) studied film-induced tourism focusing Chinese visits to East Hokkaido and found that the movie played a key role for Chinese to recognize the east of Hokkaido and motivated them to visit.

(2) Patterns and characteristics of Chinese tourists' behaviors research. Shimizu (2007) studied the changes in the patterns of Chinese tourism to Japan. Based on the discussion on concept, it suggested that activities of Chinese travelers changed from 'sightseeing' to 'tourism'. Jin (2010) examined the spatial characteristics of Chinese tourists in Japan by analyzing package tours offered in China. It showed that the main destinations of Chinese tourists are large cities such as Tokyo and Osaka and Chinese tourists were mainly attracted to shopping and exploring lively streets in cities. Cui (2011) taking the group package tours as a case, studied the sightseeing routes and activities of Chinese visitors to Japan. It showed that Chinese tourists are interested in Japanese traditional culture and daily life and contented with the social orders, city and country landscape. Shi et al. (2012) examined the status of Chinese travel behavior and expenditures, using a Chinese family of visitors to Japan as a case study. Analysis showed a tendency to try to save travel costs, as well as to try to ensure the greatest possible amount of time for sightseeing. Hishida et al. (2012) studied the actual situation of Chinese tourist's behavior change and its regional differences. The study showed the differences and changes in destination choices and its multiplicities in each region in China to reveal the current trends of their tourism behaviors in Japan.

Overall, by summarizing above literatures, some gaps can be identified:

(1) The literatures reviewed above provide a good starting point for understanding of tourist flow. However, most previous articles were limited to isolated routes and linear pattern. They did not consider the positioning of various destinations in whole region so they are limited in their ability to analyze the tourist flows from the perspective of network.

(2) The studies did not provide quantitative indicators for evaluating the roles and functions of destinations, link mode and network pattern systematically. Thus, it is necessary to construct tourist flow network to reveal characteristics of tourist flow through quantitative methods.

(3) Although SNA method has unique advantages, studies regarding tourist flows that utilized the SNA method are scarce, and direct analyses that systematically employ SNA indicators to

study the spatial structures and network characteristics of tourist flows and the roles of nodes are lacking (Peng et al., 2016). In addition, a summary of the tourism network patterns based on SNA is still insufficient.

(4) Existing research on the Chinese travel to Japan has been undertaken into the aspects of motivation and decision, patterns and characteristics. However, few studies identified the differences between group inclusive tourists (GITs) and free independent tourists (FITs), and no research has specifically addressed the structural characteristics associated with the Chinese tourist flows.

### 1.3 Objectives

This dissertation aims to understand the characteristics and patterns of tourist flow by addressing these gaps mentioned above based on the systematic analyses from three levels: role, function and structure of destinations, itinerary patterns and network patterns (Figure 1.1). Specifically, taking Chinese tourist flow in Japan as a study object, this research is designed to identify the characteristics of itinerary patterns and network patterns of tourist flows at inter destination level. Meanwhile, the study aims to understand the differences between GIT flows and FIT flows through comparative analyses throughout the research. Moreover, the factors influencing tourist flow at inter destination level will be understood. The results yield not only the theoretical values for tourist flow research but also practical implications for future development of Japan’s inbound tourism.

The chapters and their objectives are as followings:

(1) The second chapter introduces the methodology and data collection of this study. Especially Social Network Analysis, as a main method, is specifically introduced.

(2) The third chapter provides an overview of Chinese outbound travel to Japan. History and the present situation of the policy and promotion, volume change and structure of tourists are reviewed. Besides, preliminary analysis of geographical distribution of Chinese tourists at a prefecture level is conducted.

(3) The forth chapter identifies the itinerary patterns and their characteristics of Chinese tourist flows in Japan at inter destination level. The roles and functions of destinations in itineraries are studied. Furthermore, the differences between GIT itineraries and FIT itineraries are analyzed.

(4) The fifth chapter is designed to understand the structural characteristics of tourist flows network by means of Social Network Analysis method. Geographical distribution of Chinese tourist flows, spatial structure and pattern of the whole network and structure of destinations in this network are analyzed. The differences between GIT network and FIT work are also analyzed.

(5) The sixth chapter tries to explain the factors influencing Chinese tourist flows and different impacts of factors on GIT and FIT flows based on qualitative context analysis.

(6) The last chapter summarizes the findings and put forward the theoretical values and practical implications of this research.

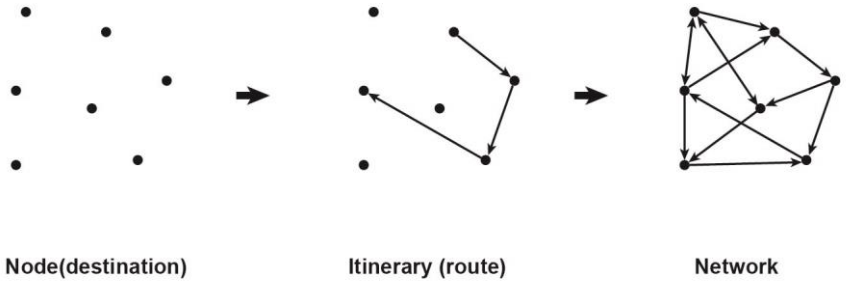



Figure 1.1 Three levels for understanding tourist flows

# II Methodology and data

## 2.1 Definitions

### Destination

Based on the definition of UNWTO (2002) and the discussion of Lew and Mckercher (2006), the ‘destination’ in this study is defined as the area that includes tourism products such as support services, facilities, and tourism attractions or resources. Basically, in Japan, it has administrative boundaries on a city/district level and the services and attractions could normally be consumed in a daytrip from the heart of the destination. Therefore most cities are viewed as destinations for tourists (e.g. Kyoto, Nagoya)

In addition, the services and attractions are normally promoted by the travel services as part of its overall suite of products so they share integrated image and perception defining its market competitiveness. In this sense, there are some exceptions of destination crossing the geographical administrative boundaries. For instance, the Fujisan (Mount Fuji) is viewed as one destination although the attractions are located in different municipalities. Tokyo Disneyland is viewed as a part of Tokyo destination although it is located at Urayasu city.

### Group inclusive tourist (GIT)

Group inclusive tourist refers to the people traveling through a group inclusive tour provided by a tour operator. GITs are usually organized through a travel operator and escorted by a tour guide. Fundamentally, there are two types of package tours: a basic package tour (only includes transportation and accommodation) and an all-inclusive package tour (a trip planned and paid for a single price in advance, which covers commercial transportation and accommodation, meals and sightseeing, and sometimes with an escort or guide)(Wong and Kwong, 2004). Anyhow, the itinerary of a GIT is prearranged by travel operator.

### Free independent tourist (FIT)

Free independent tourist can be defined as an individual (or small group) traveling and vacationing with a self-booked itinerary. Unlike GIT, FIT usually makes their own itinerary including activities, transportation and accommodation arrangements, choosing not to buy prearranged packages or tours. FITs may also purchase services or products from travel operators such as hotel rooms or theme park ticket booking. In addition, Chinese FITs usually purchase the JAPAN RAIL PASS through the travel services in China before their departure.

**Tourist flow**

According to Bowden (2003), a tourist flow is a projection of the trajectory of tourists and related activities in geographical space and is composed of three basic elements: the direction, the rate and the link mode. Tourist flow is defined by travel itinerary route in this study and it could possess quantitative and directional characteristics as well. Meanwhile, the link mode (train, airplane, bus, etc.) could be considered when some comparative analyses focusing GIT and FIT are undergoing.

**Tourist flow network**

In this research, the network constituted by destinations and tourist flows among them is defined as tourist flow network. Although a network can be divided into directed and undirected network, all tourist flow network is viewed directed network considering the direction of tourist flow in this research. Meanwhile, due to different types and characteristics of tourist, the tourist flow network can be divided into GIT network and FIT network.

## 2.2 Methodology

First, with respect to the method of data collection, this study is designed to collect travel itineraries from travel services and tourism websites to attain tourist flows data, so field work (including visiting travel company and interviewing targeting at managers of travel companies) and internet survey are used.

Second, based on descriptive statistics of the itineraries, main types of tourist flow patterns are distinguished. Then the analysis of characteristics of different patterns and the comparative analysis for GIT and FIT itineraries are conducted. Some Analysis of variance (ANOVA) and Chi-square analysis are used in this process.

Third, social network analysis with software NetDraw/Ucinet will be used to map the tourist flows among the destinations (itineraries) and construct indicators calculation of tourist flow network, where the tourist flows (routes among destinations) are treated as a series of links and the destinations are treated as nodes.

Fourth, some indicators from Social Network Analysis will be employed to identify the roles and functions of nodes (destinations) and the structural characteristics of tourist flows network in a measurable way.

Lastly, this research would not only offer a new method for the analysis of tourist flow, but consequently provide rational suggestions about tourist routes designing, attraction planning and destination marketing for Japan's inbound tourism.

### 2.2.1 Social Network Analysis (SNA)

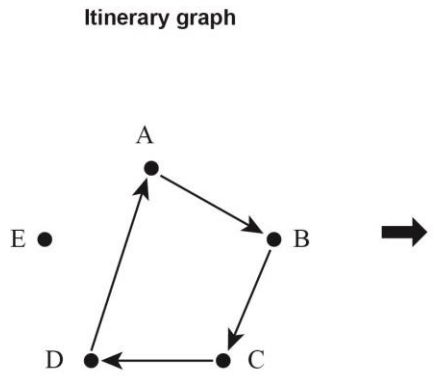
SNA method is employed the to analyze structural characteristics and pattern of Chinese tourist flows in Japan, where the destinations are treated as nodes and the tourist routes between destinations are regarded as a series of links.

**Process of analysis**

**First,** the scope and nodes of Chinese tourist flow are determined. The activity space of travel itineraries means the network scope and the related destinations are recognized as the nodes. Particularly, Okinawa is not considered in this research since it is far away from Japan's home islands and it is often a single destination for Chinese tourists.

**Second**, linkage relationships of destinations are determined, which are defined by touring itineraries. For example, Figure 2.1 shows an example of an itinerary involved by 10 tourists in five destinations (labeled A, B, C, D and E). The graph indicates that these tourists first visited destination A, and then destinations B, C and D in sequence and returned to A; but they did not visit destination E. Based on the graph, the asymmetric matrix of this itinerary can be constructed such that the rows and columns indicate destinations in the graph. In the matrix, a 10 in the $(i, j)^{th}$ cell (row i, column j) indicates 10 direct links from i to j, and a 0 in the cell indicates that direct link does not exist. The matrix describes what network analysis refers to as sociometric choices, which merely depict the presence or absence of a given type of relationship (Shih, 2006).

**Third**, through summing up the matrix of every tourist itinerary, the research constructs asymmetric valued matrix in which a row stands for the starting node of the destinations and a column for the terminal node. The number of tourists moving from one destination to another is recorded in the relative cell. In other words, a *N* in the $(i, j)^{th}$ cell (row i, column j) indicates *N* tourists traveled from node i to node j, and a 0 in the cell indicates that the tourist flow does not exist between i and j. Valued matrices for whole tourist flow network, GIT network and FIT network are constructed respectively. In order to conduct comparative analysis between GIT network and FIT network, the value of *N* in this research is transformed into an absolute value.




Network matrix

| | A | B | C | D | E |
|---|---|---|---|---|---|
| A | - | 10 | 0 | 0 | 0 |
| B | 0 | - | 10 | 0 | 0 |
| C | 0 | 0 | - | 10 | 0 |
| D | 10 | 0 | 0 | - | 0 |
| E | 0 | 0 | 0 | 0 | - |

Figure 2.1 An example of itinerary graph and network matrix

**Finally**, based on the valued matrix, an appropriate cut-off value is selected to dichotomize the cells of the valued matrix. As the result of dichotomizing process, the (i, j)$^{th}$ cell of the valued matrix becomes 0 when the number of times of the tourist routes from destination i to destination j is below the chosen cut-off value, and otherwise it becomes 1 (Shih, 2006). The binary data yielded by dichotomized matrix are applied to the indicators and graphs of the network analysis. To analyze the characteristics of the tourist-flow network, the numerical matrix (valued matrix) must be translated into a dichotomized matrix by selecting an appropriate cutoff value after repeated testing and selection (Peng et al., 2016). SNA programs are primarily based on the dichotomized matrix using Ucinet software. Three dichotomized matrices, including matrix for whole tourist flow network, GIT network and FIT network will be yield.

**Indicators of SNA**

The following paragraphs present the techniques and indicators of the SNA which are appropriate for examining the network characteristics of Chinese tourist flows in this study. The indicators include two aspects: the nodes structure and the network structure. Among them, the node centrality is the main indicator to evaluate structural characteristics of nodes. The indicators of whole network structure include: Size, Density, Diameter and Centralization of the network. The formulas of these indicators have been used and explained frequently (Hwang et al., 2006; Shih, 2006; Peng et al., 2016)

Node centrality is used to measure the prominence of certain nodes in a network (Wasserman and Faust, 1994). Three of these centrality concepts have been identified as particularly relevant in the context of multicity trip networks: degree centrality, betweenness centrality, and closeness centrality (Hwang et al., 2006).

**Degree centrality (*$C_D$*),** which is the simplest and most intuitive, refers to the number of links a node has to other nodes in the network. In directional networks, degree centrality can be divided into out-degree and in-degree centrality. The in-degree centrality (*$C_{D,in}$*) and out-degree centrality (*$C_{D,out}$*) of a given node are formally defined as

$$C_{D,in}(n_i) = \sum_{j=1}^{l} r_{ij,in}\,;\;\; C_{D,out}(n_i) = \sum_{j=1}^{l} r_{ij,out} \quad (2.1)$$

Where $r_{in}$ and $r_{out}$, respectively, denote one of the inward and outward connections of node *i*, and *l* indicates the number of nodes within the network. In-degree centrality of a node *i* is the sum

of the number of nodes *j* in the network (1 to *l*) that connect inwardly (from node *j* to node *i*); out-degree centrality of a node *i* is the sum of the number of nodes *j* in the network (1 to *l*) that connect outwardly (from node *i* to node *j*) (Shih, 2006).

The outdegree centrality of a destination is the indicator of the effects of tourist flow divergence to others in the region. The higher out-degree means better performance as the gateway with more tourists taking this destination as the entrance to the region. On the contrary, the in-degree centrality reflects the gathering ability of tourist flows. By examining and comparing the two indices, we can judge the function of a particular destination as a gateway, egress or hub (Liu et al., 2012).

**Closeness centrality ($C_C$)** focuses on how close a destination is to all the other destinations in the network. It is defined as

$$C_C(n_i) = \frac{1}{\sum_{j=1}^{l} d(n_i, n_j)} \qquad (2.2)$$

The count $d$ ($n_i$, $n_j$) denotes the geodesic distance, which is defined as the length of the shortest path between nodes *i* and *j*. Closeness centrality of a node *i* is the inverse of the sum of the geodesic distances from node *i* to all the other nodes in the network (1 to *l*). In a directional network, closeness centrality can be divided into ‘‘in-closeness’’ and ‘‘out-closeness’’, respectively, based on inward and outward connections, even so both formulas are the same as (2) (Shih, 2006). In the context of tourist flows network, the higher $C_C$ one destination has, the more reachable other destinations it possesses and it is more central and closer to all of the other destinations, and vice versa.

**Betweenness centrality ($C_B$)**, measures the extent to which a particular node lies between the various other nodes in the network (Scott, 2000; Shih, 2006). It is defined as

$$C_B(n_i) = \sum_j^l \quad \sum_k^l \frac{g_{jk}(n_i)}{g_{jk}} \quad (2.3)$$

where $g_{jk}$ denotes the number of geodesics between nodes *j* and *k*, and $g_{jk}$ ($n_i$) denotes the number of geodesics linking the two nodes that contain node *i*. Betweenness centrality of a node *i* is the sum of the node *i*’s estimated probabilities of standing along any geodesic that all pairs of nodes (nodes *j* and *k*, excluding node *i*) in the network have selected. Higher $C_B$ means more powerful control of tourist flows and more structural advantages, which indicates a destination will be depended by other destinations in a more intensive way (Liu et al., 2012).

The network **size** is a measure of the number of nodes or elements that compose the network (Asero et al., 2016). The **diameter** of the network is the longest geodesic distance between two nodes (Casanueva et al., 2016). The **density (Δ)** of a network is the proportion of possible lines that are actually present in the network. It is the ratio of the number of lines present (L), to the maximum possible (Wassermann and Faust 1994). In the analysis of tourist flow network, density is the proportion between the existing number of links (L), or routes connecting tourist destinations, and the maximum number of potential ties [g (g – 1) / 2] (Asero et al., 2016). In a directional network, it is computed as

$$\Delta = 2L/g(g-1) \quad (2.4)$$

**Network centralization** is a measure used to describe the structural characteristics of the network as a whole. It is determined by calculating the difference between the centrality scores of the most central node and those of all other nodes in the network. It is usually expressed as a ratio of the actual sum of the differences to the maximal possible sum of them (Hwang et al., 2006). It can be classified into three levels: degree centralization, closeness centralization and betweenness centralization.

**Degree centralization**

$$C_D = \frac{\sum_{i=1}^{g}[C_D(n^*)-C_D(n_i)]}{(g-2)(g-1)} \quad (2.5)$$

**Closeness centralization**

$$C_C = \frac{\sum_{i=1}^{g}[C_C(n^*)-C_C(n_i)]}{[(g-2)(g-1)]/(2g-3)} \quad (2.6)$$

**Betweenness centralization**

$$C_B = \frac{2\sum_{i=1}^{g}[C_B(n^*)-C_B(n_i)]}{[(g-1)^2(g-2)]} \quad (2.7)$$

### 2.2.2 Content Analysis

Content analysis is a systematic and objective mean of describing and quantifying phenomena and it is also known as a method of analyzing documents. The aim is to attain a condensed and broad description of the phenomenon (Elo and Kyngas, 2008).

In this study, content analysis is used in two aspects: the first is summarizing the itineraries of

GITs and FITs through the content analysis of itinerary brochures of travel services and travel diaries collected via internet. The second is to identify the factors influencing tourist flows through analysis of travel diary texts.

### 2.3 Data collection

One critical problem that restricts the generalizability of tourist flow research lies on the deficiency in detailed, standard and accurate data, since each tourist's spatial movement cannot be recorded thoroughly and accurately (Shoval and Isaacson, 2007). Some scholars have collected precise tourists' spatial data by passive mobile positioning methods (Ahas et al., 2007), it is just applicable to the intra destination tourist flow research.

At the inter destination level, majority of the data for existing studies come from investigations with tourists and panel data. However, both panel data from the supply-side and from the demand-side do not take multi-destination trip phenomenon into account adequately. As for the investigations with tourists, sample size becomes a sensitive issue with trip itinerary data because of the great diversity of routes and destinations that travelers take (Lew and Mckercher, 2002).

Although group tour is still the main selection for Chinese outbound tourists, there are more and more tourists traveling independently to Japan. In 2016, the number of personal tour visa for Chinese citizens issued by Japanese government reached 1.63 million while the number of group tour visa issuance was 1.75 million. The two types of tourists are basically equal in the number. Therefore, this study was designed to collect tourist flow data of both Group Inclusive Tourists (GITs) and Free Independent Tourists (FITs).

In addition, for an overview understanding of Chinese tourists to Japan, the public statistic data about Japan's inbound tourism is also needed. The data collection type, source and method are summarized and showed in the following Figure 2.2.

#### 2.3.1 GIT data

The tourist flow data of GITs was collected through a leading online travel group Tongcheng. It is one of the top 3 online tourism groups in China in 2016, and it is not only a travel agency but also an online platform so travel services in China can sell their tourism products via this group's website. The author visited the managers of Tongcheng's offices in Shanghai and Hangzhou respectively. The data obtained from Tongcheng comes from 52 travel agencies throughout 28

provinces in China which ensure sufficient representativeness.

The GIT flow data is based on two aspects: travel itineraries and sales data. The travel itineraries sold by travel services provide many information guidance (Product ID, length of trip, airline, hotel, transport, destinations and attractions), which involve the directionality characteristic and link mode of tourist flows (Figure 2.3). Through content analysis of travel itinerary brochures, the number of destinations and their sequence and length of stay of each itinerary are identified. On the other hand, the sales data provide more detailed information about the price, departure time, source region of tourist and the number of tourists who brought the itineraries, which is important because it includes the quantitative characteristic of tourist flows. By means of descriptive statistics of sales data, tourists' sources and their choices for itineraries are analyzed. At last, a total of 429 GIT itineraries involved 28,947 tourists and 52 travel services for a full year 2016, were collected.

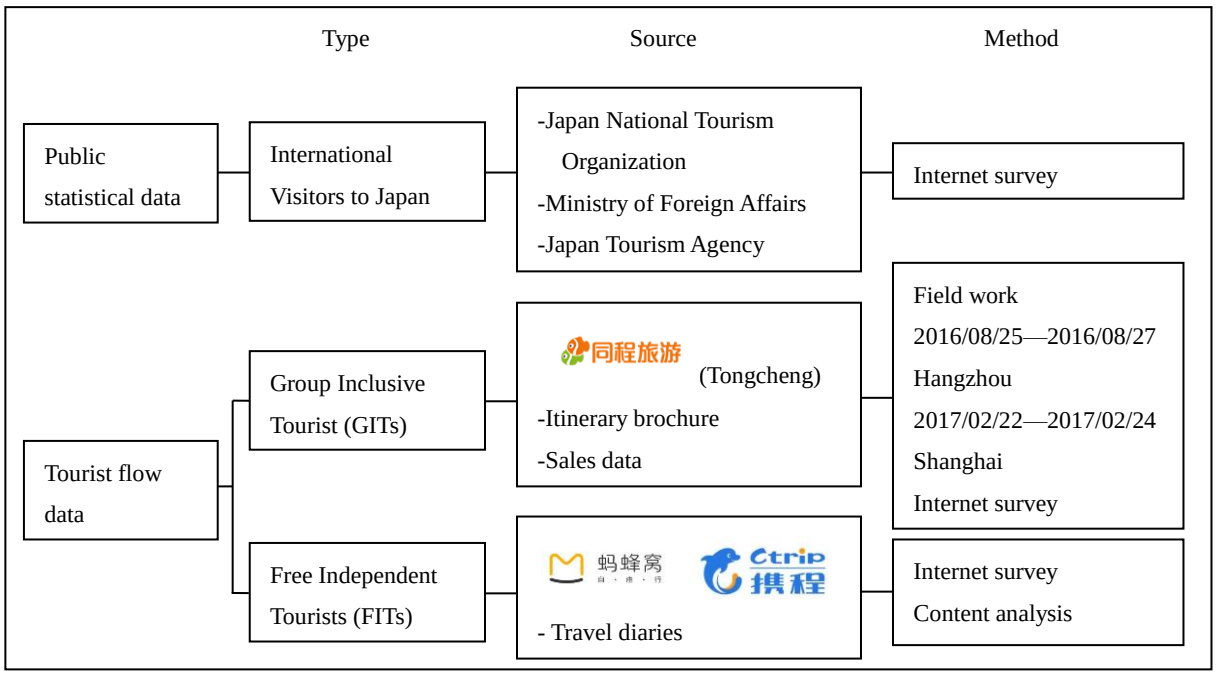



Figure 2.2 Data type, source and collection method

同程旅游

参考行程A

| 产品信息 | |
|---|---|
| 产品名称 | 20399 |
| 产品名称 | 【爆款热销】北海道温泉 6 日游 ( 4-5 钻 ) |
| 适用团期 | 2016-10-18;2016-10-25 |

参考航班

去程 上海 → 北海道

| | | | | |
|---|---|---|---|---|
| 东方航空 | 起飞 | 12:50 | 上海 | 浦东机场 |
| MU283 | 抵达 | 17:40 | 北海道 | 旭川机场 |

返程 北海道 → 上海

| | | | | |
|---|---|---|---|---|
| 东方航空 | 起飞 | 19:00 | 北海道 | 旭川机场 |
| MU284 | 抵达 | 22:05 | 上海 | 浦东机场 |

* 提示：以上航班信息仅供参考，具体以出团通知书为准。

参考行程

第 1 天 上海 → 旭川 当天游玩主题：团队游行程

上海—旭川机场(机场～酒店 约 1 小时) 参考航班： MU283 12：40—17：40

搭乘东航国际航班飞往北海道旭川机场，抵达后导游接送 ，入住层云峡大雪酒店，享受丰盛的温泉酒店晚餐，泡露天温泉赏景。

餐饮 早餐:自理 中餐:包含 机上用餐 晚餐:包含 温泉酒店会席料理

住宿 层云峡大雪温泉 http://www.hotel-taisetsu.com

第 2 天 旭川 → 定山溪 当天游玩主题：团队游行程

旭川——男山酒造-美瑛清池—丰平峡水坝 ( 赏枫 9 月下旬—10 月中旬 ) —定山溪温泉

早餐后前往【男山酒造】( 60MIN )

【美瑛清池】( 约 30MIN )

【丰平峡水坝+赠送电气自动车体验】(约 30MIN)

晚上入住温泉酒店，体验正宗日式温泉。

餐饮 早餐:包含 饭店内 中餐:包含 日式定食 晚餐:包含 和洋式自助料理或宴会料理

住宿 定山溪鹿之汤或定山溪山溪苑或定山溪 VIEW 或同类

景点 丰平峡水坝

由定山溪温泉沿着丰平川行走 7 公里，可抵达丰平峡。春天的新绿及秋天的枫红都异常的美丽，因此被林野庁选为“水浪之

Figure 2.3 A sample of itinerary collected from travel service

### 2.3.2 FIT data

The original FIT data of this study were collected from travel diaries on two websites (Figure 2.4; every diary has an ID for its web page), which were posted by mainland Chinese tourists who traveled to Japan in 2016. The two websites used are Mafengwo (http://www.mafengwo.cn) and Ctrip (http://www.ctrip.com). Mafengwo is the most famous Chinese travel SNS website that enables users to share travel experiences with each other. Ctrip is the biggest provider of travel services including accommodation reservation, transportation ticketing and also the trip diaries sharing in China.

The FIT data used in this study is characterized by three aspects: firstly, aiming to sharing travel experiences, all the travel diaries are online version and publicly available thus diary texts can be used for study. Secondly, tourists who wrote diaries on these websites are independent tourists, as a result their movements in Japan are of their free will, demonstrating a flexible travelling pattern as they have control over their itineraries, time rationing, accommodation and activities compared to group inclusive tourists. Thirdly, these diaries are free expressions of tourist' thoughts, experiences and feelings and in a structured format which ensure the records comprise detailed and accurate information about travel purposes, trip arrangement, daily movements, attractions visited, activities at each destination, transport mode among destinations and tips for people who want to travel to Japan. At last, 458 itineraries involved 1,158 tourists are collected.

### 2.3.3 Sample analysis

As displayed in Table 2.1, both GITs and FITs were mainly generated from East China (64.6% and 42.4% respectively), which is the most developed region in China. Majority of GITs (73.1%) stayed for 6 days 5 nights while FITs stayed 8 days 7 nights and more (61.9%). Most GITs (82.3%) chose a trip with 4-7 destinations, and the average number of destinations visited by GITs per trip was is 5.7 while that of FITs is 6.8. The majority of tourists' cost of per package trip was 5001-7000RMB (43.3%) and 3001-5000 RMB (37.9%) while majority of FITs (65.0%) spend more than 9000 RMB per trip.


Figure 2.4 A sample of travel diary collected from Mafengwo

Table 2.1 Profile of the sample

| | | GIT | FIT |
|---|---|---|---|
| **Source regions of tourists** | East China | 64.6% | 42.4% |
| | North China | 13.6% | 20.7% |
| | South China | 7.6% | 16.7% |
| | Central China | 6.4% | 2.8% |
| | Southwest China | 3.7% | 13.5% |
| | Northeast China | 2.9% | 1.5% |
| | Northwest China | 1.2% | 2.4% |
| **Length of trip** | 4 days 3 nights and less | 0.5% | 3.6% |
| | 5 days 4 nights | 11.3% | 10.2% |
| | 6 days 5 nights | 73.1% | 12.1% |
| | 7 days 6 nights | 11.7% | 12.2% |
| | 8 days 7 nights and more | 3.4% | 61.9% |
| **Number of destinations per trip** | 2-3 | 5.9% | 11.5% |
| | 4-5 | 41.9% | 28.8% |
| | 6-7 | 40.4% | 27.4% |
| | 8-9 | 9.2% | 18.1% |
| | 10 and more | 2.6% | 14.2% |
| **Average expense of each itinerary (RMB)** | ≤3000 | 5.0% | 2.2% |
| | 3001-5000 | 37.9% | 4.3% |
| | 5001-7000 | 43.3% | 12.7% |
| | 7001-9000 | 10.2% | 15.8% |
| | ≥9001 | 3.5% | 65.0% |

Note:

East China: Shanghai, Zhejiang, Jiangsu, Shandong, Anhui;

North China: Beijing, Hebei, Tianjin, Shanxi, Inner Mongolia;

South China: Guangdong, Guangxi, Fujian, Hainan;

Central China: Hunan, Hubei, Henan, Jiangxi;

Southwest China: Chongqing, Sichuan, Yunnan, Guizhou;

Northeast China: Heilongjiang, Jilin, Liaoning;

Northwest China: Gansu, Shannxi, Ningxia.

# III Overview of Chinese outbound travel to Japan

## 3.1 Development process

Chinese outbound travel is growing rapidly due to China's rising economy, relaxation of restrictions on foreign travel, and the improvement of people's living standards and disposable incomes. According to the China National Tourism Administration (CNTA), in the last 10 years from 2006 to 2016, the number of Chinese outbound travelers grew from 35 million to 122 million, averaging a 15% growth each year. Japan has been the third largest overseas tourist destination for Chinese in 2016 (just behind Thailand and South Korea).

### 3.1.1 Visa policy

The tourism exchanges between China and Japan relatively have a short history and it has developed fast since normalization of China-Japan diplomatic relations in 1972. While traditionally Chinese travelers visited Japan only for business or official purposes, the travel for private purpose of leisure or sightseeing just began after 2000 when Japan got the Approved Destination Status (ADS, which is a scheme as a means of approving which countries could receive groups of Chinese leisure tourists based on bilateral agreements between governments). The group tour visa issuance for Chinese by Japan started (limited to residents of Beijing City, Shanghai City, and Guangdong Province) in the same year. In 2004 the regions for Chinese group tour visa issuance expanded to other five provinces and it expanded to the nationwide in 2005. To attract more Chinese families visiting Japan, family tour visas started for families with annual income in excess of RMB 270,000 in 2008.

Another important shift of the visa policy occurred in 2009 when personal tour visa issuance started (limited to three government offices of Beijing, Shanghai, and Guangzhou but expanded to the nationwide in 2010). Since 2011, the multiple-entry visas have begun to be issued to wealthy individual Chinese tourists and their families whose first travel destination is Okinawa. In order to revitalize demand for traveling to the Tohoku region, Multiple-entry visa issuance for Chinese travelers whose first destinations are three prefectures of Tohoku (Iwate, Miyagi, and Fukushima) started since July 2012. In January 2015, requirements for three-year, multiple-entry personal tour visas issuance were relaxed and five-year, multiple-entry personal tour visas issuance for high-income groups started. Until 2017, there are two kinds of tour visa for Chinese tourists and each has different requirements (Table 3.1).

Table 3.1 Visa policy for Chinese tourist

| Objective | Visa type | Permitted period of stay | Requirements |
|---|---|---|---|
| Group Tourists | Single-entry visa | Up to 15 days | Chinese travel agency applies for a group tourist visa on tourist behalf. Tourist is not allowed to travel on his/her own for the duration of the tour and must be accompanied by a tour escort when travelling. |
| Individual Tourists | Single-entry visa | Up to either 15 days or 30 days | Prepare his/her own travel itinerary in advance, approach an approved Chinese travel agency to make further arrangements for the travel, and to lodge the visa application through the travel agency |
| | Multiple-entry visa for individual tourist visiting Okinawa / Tohoku Region (Aomori, Iwate, Miyagi, Akita, Yamagata, Fukushima) | Up to 30 days for each visit. Visa is valid for 3 years. | Prepare his/her own travel itinerary in advance, approach an approved Chinese travel agency to make further arrangements for travel, and then lodge the visa application through the travel agency for the first visit.<br>Stay at least one night in either Okinawa Prefecture or any prefecture in Tohoku Region (Aomori, Iwate, Miyagi, Akita, Yamagata, Fukushima)<br>The applicant who stays in Okinawa must have either a sufficient level of financial capability, or a certain level of financial capability and traveled to Japan at least once in the last three years for a short-term visit |
| | Multiple-entry visa for individual tourist with a sufficient level of financial capability | Up to 30 days for each visit. Visa is valid for 3 years. | Prepare his/her own travel itinerary in advance, approach an approved Chinese travel agency to make further arrangements for the travel, and to lodge the visa application through the travel agency for the first visit. |
| | Multiple–entry visa for Chinese visitor residing outside of China with a sufficient level of financial capability | Up to 30 days for each visit. Visa is valid for 3 years. | |
| | Multiple–entry visa for Chinese visitor residing outside of China with a substantially high income | Up to 90 days for each visit. Visa is valid for 5 years. | |

Source: Ministry of Foreign Affairs of Japan

### 3.1.2 Promotion

Aiming to achieve the goal of inbound tourism, lots of promotion campaigns were launched targeting for Chinese. In 2002, the large visiting delegation with more than 5000 officers from China visited Japan to celebrate the 30th anniversary of the normalization of China-Japan diplomatic relations. Tourism exchange was regarded as a chance for improving China-Japan ties at that time. Since 2003, a promotional campaign titled the ‘‘visit Japan campaign’’ or YOKOSO! (Welcome to) Japan has been launched through concerted efforts by the public and private sectors in Japan, and China was identified as priority market.

In 2006, Japan and China kicked off ‘tourism exchange year’, with both sides expressed hope that tourism and grassroots exchanges could help improve the strained political relations and various exchange projects were implemented. In the same year, the first Meeting of Japanese, Chinese and South Korean Tourism Ministers and commemorative events were held in Hokkaido. Plans for an expansion of tourism exchanges within the Japan-China-South Korean were formulated. The mechanism of Tourism Ministers Meeting and related events promoted the exchange of tourism and stepped up cooperation between Japan and China.

In addition to the nationwide plans, projects of local destinations started to attract Chinese tourists. For example, In order to promote the appeal of Chubu-Hokuriku region to foreign tourists particularly visitors from China, the Chubu and Hokuriku-Shin’etsu District Transport Bureaus launched the Shoryudo Project in January 2012, providing Shoryudo Welcome Card to offer discounts and special offers for public transportation, shops, restaurants, hotels and tourist attractions in Shoryudo region.

### 3.1.3 Volume

The number of Chinese travelers to Japan shows a significant growth from 0.35 million in 2000 to 6.37 million in 2016, with the average annual growth reaching 19.8% in the past 16 years (Figure 3.1). The number kept a steady growth from 2000 to 2009 while the great fluctuation is observed for year 2011 and 2013 which was affected by 2011 East Japan earthquake and 2012 dispute over Diaoyu/Senkaku Islands respectively. After 2014, Japan experienced sharp upturn in Chinese tourist numbers. On the one hand, the diplomatic tensions subsided. On the other hand, the much weaker yen caused Japan travel much more affordable and Chinese public’s penchant for shopping overseas stimulated the dramatic increase of Japan travel.

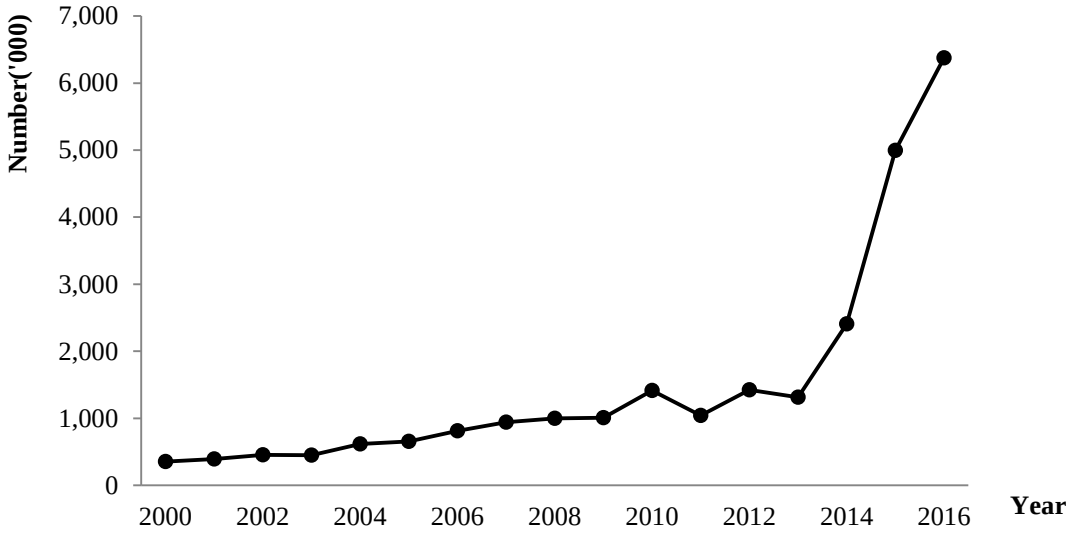



Figure 3.1 Number of Chinese travelers to Japan (2000-2016)

Source: Japan National Tourism Organization

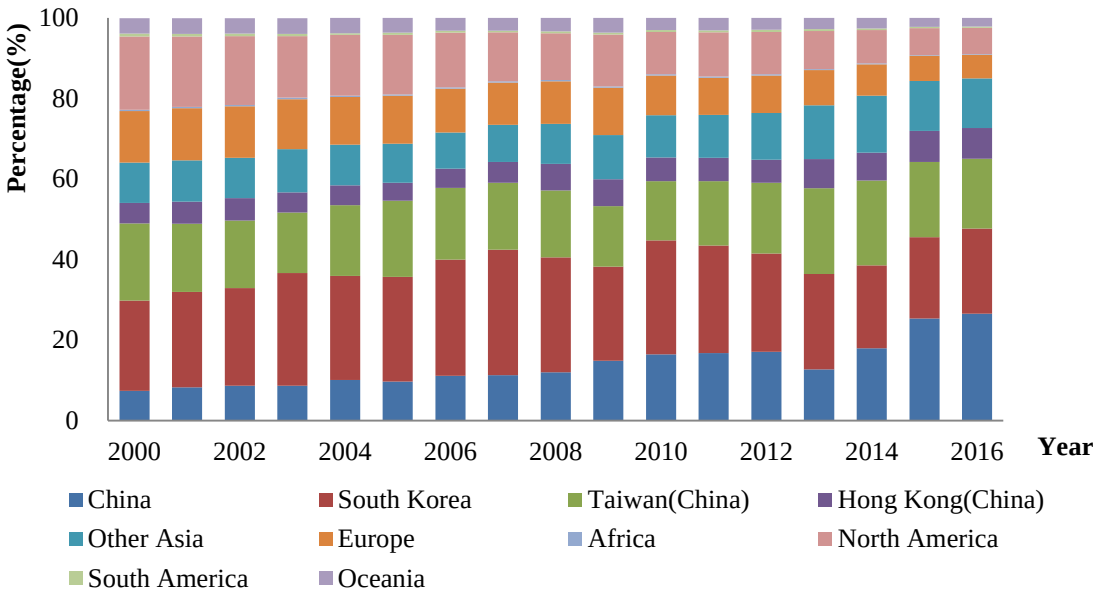



Figure 3.2 Change of share of foreign travelers to Japan by Country/ Region (2000-2016)

Source: Japan National Tourism Organization

The share of Chinese travelers among the total foreign travelers in Japan also increased year by year except 2013 (Figure 3.2). China has been the largest inbound tourism market for Japan since 2015. By 2016, Chinese travelers comprised 26.5% of foreign travelers to Japan.

### 3.1.4 Structure

Before individual visa were issued, it is indispensable to participate group package tours provided by travel agencies that are qualified to sell the tours to Japan (Jin, 2010). As requested, the tourists should travel in a group and be accompanied by a tour guide. However, along with the issuance of personal tour visas, more and more Chinese traveled independently without a local guide on their trip. Group travel still is a popular type while individual travel has a more significant growth. Japan issued a record-breaking 1.89 million personal tour visas to Chinese visitors in 2016, exceeding the number of group tour visas for the first time (Figure 3.3).

## 3.2 Spatial distribution of Chinese tourists in Japan

### 3.2.1 Geographic concentration

A geographic concentration index is employed here to examine the overall spatial concentration of Chinese tourists in Japan, which is represented by following formula.

$$G=100\times\sqrt{\sum_{i=1}^{n}\left(\frac{X_i}{T}\right)^2} \qquad (3.1)$$

In the formula (3.1), G is geographic concentration index. $X_i$ is the tourist arrivals of the prefecture i (here is the number of Chinese overnight tourists), T is the total tourist arrivals of Japan, n is the total number of prefectures in Japan and here is 47. The smaller the value of G is, the more dispersed the distribution of tourists is.

As shown in Figure 3.4, the index fluctuates between 32 and 38 and shows a slight decline from a longitudinal view. This indicates that the spatial distribution of Chinese tourists has been more and more dispersed and homogeneous, and the regional agglomeration becomes weakened. The difference between prefectures has a narrowing trend especially after 2012.

A comparison for geographic concentration index of main source countries/regions of Japan in 2016 (Table 3.2) shows that the distribution of Chinese tourist is considerable dispersed. The

index is only greater than Taiwan (China).

### 3.2.2 Distribution by prefectures

To better understand the spatial distribution of Chinese tourist, the proportions of Chinese tourists to different prefectures are calculated based on the statistics of overnight tourists. Table 3.3 shows the changes of the proportions in recent 10 years from 2007 to 2016.

(1) Tokyo and Osaka are two most popular destinations for Chinese tourists and remained stable. It is reasonable because Tokyo and Osaka are the top two metropolises and inbound gateway port in Japan, with developed facilities of accommodation, amusement and shopping, famous tourist attractions and most air routes linking China.

(2) Tokyo metropolitan area (Tokyo, Chiba, and Kanagawa), Osaka metropolitan area (Osaka, Kyoto and Hyogo) and Mount Fuji area (Aichi, Yamanashi and Shizuoka) are the main three destination regions for Chinese tourists. Famous tourist attractions and world heritages (Mount Fuji, Temples in Kyoto, etc.) are concentrating in the three regions. The most popular route for foreign travelers, which is also called "Golden Route" (from Tokyo to Kyoto or Osaka with a detour to Mount Fuji), is located in these regions. However, from a longitudinal perspective, the percentage of Chinese overnight tourists concentrated in these three regions decreased by 8.61% from 2007 to 2016.

(3) The Chinese travelers to the southernmost and northernmost regions of Japan (Okinawa and Hokkaido respectively) increased significantly. The share of Chinese overnight tourists to Hokkaido grew from 2.97% in 2007 to 8.62% in 2016 while to Okinawa grew from 0.30% to 4.48%. Especially, since the government of Japan introduced multi-entry visas for Chinese individual tourists visiting Okinawa in July 2011, the number of Chinese visitors entering Okinawa has increased significantly. In addition, the popularity of a Chinese movie “If You are the One” (released in 2008), which’s main setting for the latter part of the movie is the eastern part of Hokkaido, created a boom in sightseeing tours of Hokkaido in China (Jin, 2015).

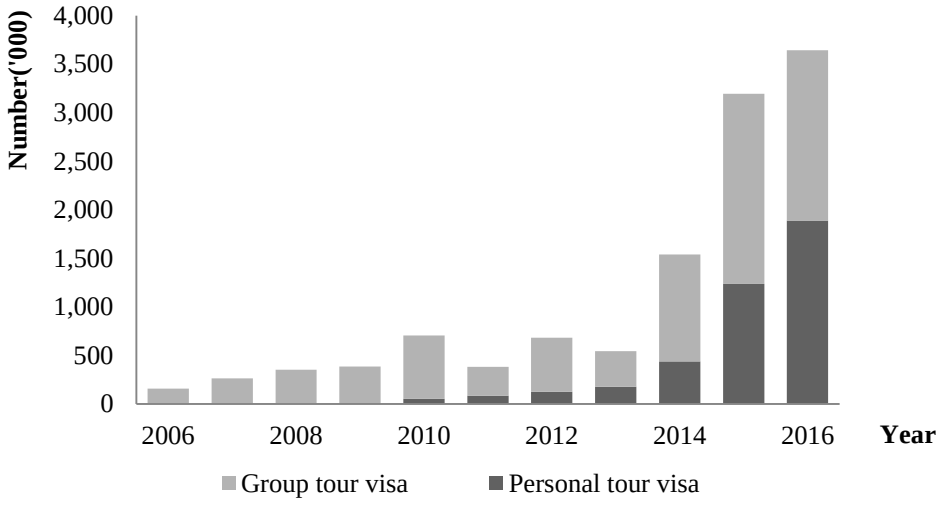



Figure 3.3 Number of tour visas issued to Chinese by Japan (2006-2016)

Source: Ministry of Foreign Affairs

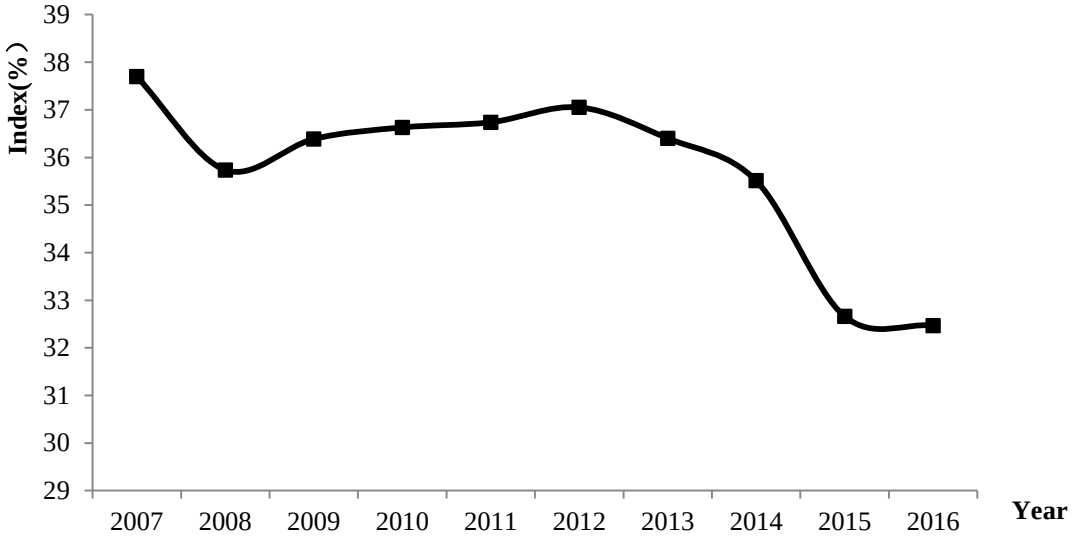



Figure 3.4 Geographic concentration index of Chinese overnight tourists in Japan (2007-2016)

Source: Compiled by author based on the Japan Tourism Agency's "Accommodation Survey".

Table 3.2 Comparison for geographic concentration index of main source countries/regions of Japan' inbound tourism (2016)

| **Country/Region** | **Index** |
|---|---|
| Taiwan(China) | 30.13 |
| China | 32.59 |
| Hong Kong(China) | 32.91 |
| South Korea | 33.77 |
| Thailand | 36.10 |
| Vietnam | 38.69 |
| Malaysia | 41.53 |
| Australia | 42.40 |
| Singapore | 42.71 |
| Indonesia | 44.78 |
| India | 44.93 |
| France | 45.11 |
| Germany | 45.91 |
| Canada | 46.13 |
| America | 46.64 |
| England | 48.98 |
| Philippines | 49.52 |
| Italy | 49.56 |
| Spain | 49.68 |
| Russia | 49.78 |

Source: Compiled by author based on the Japan Tourism Agency's "Accommodation Survey".

(4) Generally, a very low proportion of Chinese tourist visited prefectures in Tohoku region, Shikoku region and Chugoku region. Most of the destinations in these regions are not included in the tour package products provided by travel services in China. Although some independent tourists begin to travel to these regions, they are still influenced by many unfavorable factors. For example, 2011 earthquake, tsunami and ensuing nuclear disaster damaged the reputation of Tohoku Region. Other regions are affected by low popularity or accessibility.

In addition, Table 3.4 shows the regional distribution of overnight tourists in Japan by main country/region of Japan's inbound tourism in 2016. Although the absolute number of tourists increased, the proportion of Chinese tourists to Hokkaido is lower than Hong Kong (China), Taiwan (China), South Korea and some southeast countries (Singapore, Thailand and Malaysia). Conversely, the proportion of Chinese tourists to three main regions (Kanto, Chubu and Kinki) is greater than these six countries/regions. Moreover, a comparative larger portion of Chinese tourist visited Kyushu-Okinawa region (only below Hong Kong (China), Taiwan (China) and South Korea).

Table 3.3 Distribution of Chinese overnight tourists in Japan by Prefecture (2007-2016)

Unit: Percentage (%)

| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|---|---|---|---|---|
| Tokyo | 30.76 | 26.70 | 27.18 | 26.65 | 28.08 | 28.45 | 27.58 | 25.08 | 21.75 | 21.94 |
| Osaka | 14.62 | 17.38 | 14.55 | 15.78 | 16.86 | 16.25 | 16.89 | 17.49 | 15.86 | 16.20 |
| Hokkaido | 2.97 | 4.36 | 7.37 | 6.57 | 7.47 | 5.89 | 7.86 | 8.62 | 8.58 | 8.62 |
| Chiba | 9.57 | 8.99 | 13.06 | 13.69 | 10.40 | 11.84 | 9.18 | 10.50 | 8.74 | 8.33 |
| Aichi | 6.95 | 6.83 | 6.95 | 7.96 | 6.59 | 5.79 | 6.92 | 6.41 | 7.07 | 6.86 |
| Shizuoka | 4.38 | 5.09 | 4.67 | 4.30 | 3.67 | 5.26 | 3.57 | 4.31 | 6.97 | 5.80 |
| Kyoto | 2.90 | 2.79 | 2.44 | 2.81 | 3.52 | 4.16 | 5.03 | 4.64 | 5.01 | 5.45 |
| Okinawa | 0.30 | 0.63 | 0.78 | 0.79 | 2.54 | 3.10 | 3.46 | 3.95 | 4.43 | 4.48 |
| Yamanashi | 7.18 | 7.31 | 7.12 | 6.35 | 3.22 | 3.80 | 2.94 | 4.93 | 3.93 | 4.01 |
| Kanagawa | 4.45 | 3.81 | 3.53 | 3.70 | 4.00 | 3.87 | 4.36 | 3.70 | 4.76 | 3.95 |
| Fukuoka | 1.32 | 1.26 | 1.09 | 1.31 | 1.78 | 1.45 | 1.54 | 1.47 | 1.70 | 1.85 |
| Hyogo | 2.13 | 2.18 | 1.89 | 1.55 | 1.79 | 1.07 | 1.24 | 1.35 | 1.77 | 1.59 |
| Gifu | 1.13 | 1.19 | 0.88 | 0.88 | 0.88 | 0.85 | 0.72 | 0.69 | 1.01 | 1.18 |
| Wakayama | 0.23 | 0.37 | 0.20 | 0.14 | 0.15 | 0.20 | 0.27 | 0.52 | 0.67 | 0.98 |
| Nara | 0.29 | 0.21 | 0.17 | 0.22 | 0.17 | 0.18 | 0.30 | 0.47 | 0.73 | 0.95 |
| Mie | 0.47 | 0.57 | 0.53 | 0.56 | 0.61 | 0.35 | 0.38 | 0.34 | 0.81 | 0.79 |
| Shiga | 0.68 | 0.81 | 0.55 | 0.45 | 0.51 | 0.38 | 0.41 | 0.36 | 0.59 | 0.77 |
| Nagano | 0.88 | 0.76 | 0.57 | 0.74 | 0.54 | 0.47 | 0.55 | 0.56 | 0.76 | 0.67 |
| Ibaraki | 0.54 | 0.44 | 0.26 | 0.31 | 0.29 | 0.47 | 0.27 | 0.26 | 0.42 | 0.52 |
| Kumamoto | 0.36 | 0.31 | 0.24 | 0.26 | 0.53 | 0.62 | 0.61 | 0.45 | 0.65 | 0.48 |
| Oita | 0.40 | 0.35 | 0.26 | 0.25 | 0.51 | 0.30 | 0.30 | 0.27 | 0.35 | 0.41 |
| Hiroshima | 0.99 | 1.16 | 0.67 | 0.59 | 0.89 | 0.57 | 0.61 | 0.36 | 0.30 | 0.40 |
| Saitama | 0.74 | 0.83 | 0.60 | 0.35 | 0.45 | 0.48 | 0.49 | 0.32 | 0.40 | 0.37 |
| Ishikawa | 0.19 | 0.23 | 0.29 | 0.29 | 0.33 | 0.34 | 0.47 | 0.22 | 0.24 | 0.37 |
| Nagasaki | 0.76 | 0.37 | 0.43 | 0.48 | 0.49 | 0.53 | 0.38 | 0.49 | 0.38 | 0.36 |
| Kagoshima | 0.23 | 0.23 | 0.13 | 0.18 | 0.25 | 0.27 | 0.29 | 0.30 | 0.31 | 0.35 |
| Saga | 0.19 | 0.20 | 0.16 | 0.08 | 0.11 | 0.15 | 0.21 | 0.16 | 0.18 | 0.30 |
| Okayama | 0.30 | 0.35 | 0.25 | 0.20 | 0.25 | 0.22 | 0.27 | 0.18 | 0.19 | 0.27 |
| Kagawa | 0.08 | 0.10 | 0.09 | 0.08 | 0.27 | 0.15 | 0.13 | 0.08 | 0.10 | 0.23 |
| Niigata | 0.48 | 0.43 | 0.35 | 0.28 | 0.37 | 0.31 | 0.34 | 0.24 | 0.23 | 0.20 |
| Miyagi | 0.36 | 0.56 | 0.48 | 0.31 | 0.29 | 0.30 | 0.22 | 0.15 | 0.12 | 0.18 |
| Tochigi | 0.68 | 0.51 | 0.39 | 0.31 | 0.49 | 0.42 | 0.51 | 0.21 | 0.18 | 0.17 |
| Gunma | 0.30 | 0.35 | 0.23 | 0.23 | 0.20 | 0.16 | 0.33 | 0.11 | 0.10 | 0.13 |
| Toyama | 0.19 | 0.32 | 0.17 | 0.19 | 0.26 | 0.24 | 0.28 | 0.16 | 0.12 | 0.12 |
| Aomori | 0.10 | 0.18 | 0.16 | 0.13 | 0.09 | 0.10 | 0.10 | 0.07 | 0.07 | 0.10 |
| Ehime | 0.18 | 0.14 | 0.12 | 0.09 | 0.13 | 0.10 | 0.12 | 0.08 | 0.07 | 0.10 |
| Iwate | 0.19 | 0.11 | 0.15 | 0.11 | 0.07 | 0.07 | 0.06 | 0.03 | 0.05 | 0.08 |
| Fukushima | 0.58 | 0.56 | 0.23 | 0.17 | 0.13 | 0.12 | 0.14 | 0.05 | 0.04 | 0.07 |
| Tottori | 0.06 | 0.05 | 0.04 | 0.03 | 0.09 | 0.07 | 0.06 | 0.04 | 0.05 | 0.06 |

(Continue…)

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Fukui | 0.08 | 0.16 | 0.14 | 0.10 | 0.13 | 0.11 | 0.11 | 0.07 | 0.10 | 0.06 |
| Miyazaki | 0.11 | 0.12 | 0.10 | 0.03 | 0.08 | 0.06 | 0.11 | 0.06 | 0.05 | 0.05 |
| Yamagata | 0.16 | 0.18 | 0.14 | 0.14 | 0.07 | 0.08 | 0.09 | 0.06 | 0.03 | 0.05 |
| Tokushima | 0.11 | 0.10 | 0.05 | 0.07 | 0.14 | 0.12 | 0.06 | 0.05 | 0.04 | 0.04 |
| Yamaguchi | 0.25 | 0.25 | 0.15 | 0.12 | 0.14 | 0.12 | 0.10 | 0.06 | 0.04 | 0.04 |
| Kochi | 0.07 | 0.05 | 0.02 | 0.03 | 0.04 | 0.03 | 0.03 | 0.03 | 0.02 | 0.03 |
| Shimane | 0.06 | 0.04 | 0.05 | 0.03 | 0.04 | 0.06 | 0.06 | 0.02 | 0.02 | 0.03 |
| Akita | 0.07 | 0.08 | 0.12 | 0.12 | 0.08 | 0.09 | 0.08 | 0.05 | 0.02 | 0.03 |

Source: Compiled by author based on the Japan Tourism Agency’s "Accommodation Survey".

Table 3.4 Regional distribution of overnight tourists in Japan by source main country/region of Japan' inbound tourism (2016)

Unit: Percentage (%)

| | Hokkaido | Tohoku | Kanto | Chubu | Kinki | Chugoku | Shikoku | Kyushu-Okinawa |
|---|---|---|---|---|---|---|---|---|
| China | 8.62 | 0.51 | 35.41 | 19.26 | 26.72 | 0.80 | 0.41 | 8.29 |
| Hong Kong (China) | 13.72 | 0.58 | 22.33 | 10.02 | 28.40 | 2.50 | 1.68 | 20.76 |
| Taiwan(China) | 12.88 | 2.36 | 25.52 | 12.30 | 26.67 | 1.45 | 1.26 | 17.56 |
| Korea | 11.41 | 0.79 | 18.33 | 3.49 | 26.33 | 1.66 | 0.74 | 37.26 |
| Singapore | 19.94 | 0.58 | 41.68 | 9.11 | 21.13 | 0.93 | 0.31 | 6.33 |
| Thailand | 16.46 | 1.25 | 38.53 | 15.35 | 20.46 | 1.02 | 0.11 | 6.83 |
| Malaysia | 29.33 | 0.42 | 32.51 | 11.59 | 21.76 | 1.04 | 0.16 | 3.19 |
| India | 1.33 | 1.05 | 61.25 | 9.49 | 19.76 | 3.56 | 0.23 | 3.34 |
| Indonesia | 8.13 | 0.36 | 45.80 | 15.81 | 27.26 | 0.65 | 0.22 | 1.78 |
| Vietnam | 1.86 | 0.91 | 41.11 | 26.12 | 25.17 | 1.07 | 0.24 | 3.52 |
| Philippines | 5.17 | 0.86 | 46.24 | 6.58 | 35.21 | 1.09 | 0.23 | 4.62 |
| America | 2.84 | 1.23 | 57.14 | 6.67 | 21.36 | 2.87 | 0.48 | 7.42 |
| Canada | 3.65 | 0.70 | 53.33 | 6.94 | 25.80 | 3.21 | 0.49 | 5.88 |
| England | 2.31 | 0.64 | 56.62 | 7.28 | 24.08 | 4.27 | 0.43 | 4.37 |
| Germany | 1.31 | 1.13 | 54.94 | 9.48 | 23.56 | 4.37 | 0.53 | 4.68 |
| France | 1.05 | 0.73 | 48.83 | 8.10 | 30.71 | 6.08 | 0.86 | 3.64 |
| Russia | 8.43 | 1.20 | 60.51 | 7.99 | 14.67 | 1.92 | 0.57 | 4.73 |
| Italy | 0.67 | 0.44 | 47.54 | 9.34 | 34.66 | 4.38 | 0.25 | 2.72 |
| Spain | 0.40 | 0.47 | 49.11 | 9.02 | 34.83 | 4.37 | 0.25 | 1.56 |
| Australia | 8.56 | 0.90 | 44.83 | 11.11 | 26.67 | 4.86 | 0.40 | 2.68 |

# IV Itinerary patterns of Chinese tourist flows

## 4.1 Categorizing itinerary patterns

To identify Chinese tourists' itinerary patterns in Japan, this research analyzes all the collected itineraries and classifies them using the flow chart shown in Figure 4.1 put forward by Zhu et al. (2010). The distinguished flow is based on whether the first and last destination is the same place and the characteristic of route connecting the first destination. If an itinerary cannot be identified through the following process, it will be classified as a complex pattern.

Categorizing itinerary patterns would serve multiple purposes. Firstly, the recognition of different travel itineraries can help destinations to better estimate their competitiveness. If a place can be a single destination, it would gain maximum benefit. If a destination perform as a first and last destination in round trip, base camp, and regional loop pattern, it also obtain more benefits due to tourists' repeat visit in one trip . If a destination can be integrated into established trip chaining easily, the destination may offer low cost additional benefits to the tourists and obtain economic benefits from tourist activities. This consideration is important to tourism authorities who want to develop new destinations.

Secondly, understanding of the linkages between destinations helps facilitating cooperative marketing efforts and defining a tourism region. Table 4.1 has shown the tourists who go to a destination in a region are more likely to go to others in that region or neighboring region, than to destinations in remote region. Thus, strengthening the traffic connections of main destinations with surrounding satellite destinations helps to develop a broader tourism region and promote the main destination as a base camp. This is particularly applicable for destinations with international airport in Tohoku, Chugoku and Shikoku region.

Thirdly, an analysis of itinerary patterns of tourists' travel offers a basis for understanding tourist flow network. For example, if the travel itineraries in one region are mainly linear rather than loop or complex pattern, the tourist flow network may have multi centers and loosing structure. On the other hand, if base camp travel pattern is more adopted in one region, it would make the base destination becoming a center in the region because the base destination has more connections with other destinations, and it may form a single center structure of tourist flow network in that region.

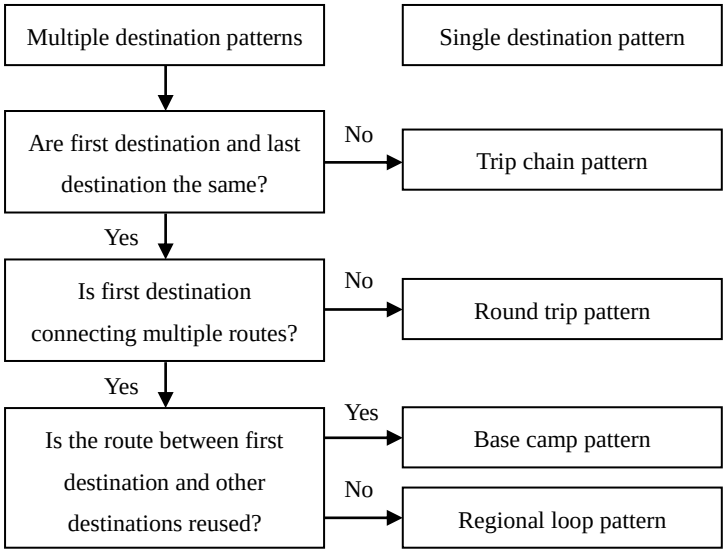



Figure 4.1 Distinguished flow chart of itinerary patterns

Source: Zhu et al (2010)

## 4.2 Characteristics of itinerary patterns

### 4.2.1 Itinerary patterns of Chinese tourists

Based on previous literatures and descriptive analysis, itinerary patterns at a inter destination level can be divided into single destination pattern and multiple destination patterns which include round trip, base camp, regional loop, trip chain and complex pattern. Of the 887 itineraries taken into account for this study, 7 are single destination pattern, 54 are round trip pattern, 53 are base camp pattern, 179 are regional loop pattern, 292 are trip chain pattern and 302 are complex pattern. The examples of different patterns are shown in the Figure 4.2.

Obviously, the single destination pattern only accounts for a tiny proportion. Compared to single destination pattern, multi destination pattern is more likely to be viewed as a rational behavior. Many reasons have been identified to account for multiple destination travel pattern. For example, multiple-benefit seeking, heterogeneity of preferences, risk and uncertainty reduction and economic rationalism (Lue et al., 1993; Tideswell and Faulkner, 1999; Yu et al., 2017). The complex pattern and the trip chain pattern are the main patterns for all itinerary patterns.

**Single destination pattern (S1):** it is the simplest spatial pattern. Tourists visit only one destination and return home. Single destination place typically requires a diversified mix of attractions, hotels, shopping malls and activities for tourists. It also needs good accessibility to Chinese cities. In Japan, only Tokyo, Osaka and Fujisan are found as the single destination places for Chinese tourists.

**Round trip pattern (M1):** it means tourists take the first destination as the main focus of the trip from which visit several other destinations along a transport line and back to the main destination using the same route. Tourists are normally captured by attractions on the way depart from the main destination or on the way back. Due to the reuse of the routes, round trip pattern is distributed mainly within one region or two neighboring regions. It mainly distributed in Kanto and Chubu region in this research (Table 4.1).

**Base camp pattern (M2):** Tourists travel to a primary destination and use it as a “base camp” from which visit other destinations in different directions. The primary destination normally connects two or more secondary destinations. Similar to round trip pattern, the base camp pattern is distributed mainly within one region or two neighboring regions (Table 4.1). The main destination in one region usually plays a role as a base camp for Chinese tourists (e.g. Osaka in

Kinki region, Tokyo in Kanto region, Fukuoka in Kyushu region and Takamatsu in Shikoku region).

**Region loop pattern (M3):** Tourists travel to a primary destination and from there start a circuitous route visiting other destinations. After finishing the touring loop, they return home through the direct route between the primary destination and home (Lau and Mckercher, 2007). The region loop pattern is widely found in various regions.

**Trip chaining pattern (M4):** Tourists travel through several destinations sequentially without any repetition and return home. The trip chaining pattern is characteristic of some vacation package tours (Lue et al., 1993). Majority of the trip chaining pattern (76.37%) is located in Kanto-Chubu-Kinki region (Table 4.1). The most popular tour is the itinerary called Golden Route of Japan which combines the human landscapes in cities of Tokyo, Nagoya, Osaka or Kyoto with the natural landscapes in Hakone, Mount Fuji and so on. This flexible itinerary is ideal for most foreign visitors.

**Complex pattern (M5):** it is a combination of some or all patterns mentioned above. This is a pattern that is most suitable to describe the complexity of tourist movement patterns, allowing variations and blending of different patterns (Lau and Mckercher, 2007). Tourists adopting a complex pattern itinerary may travel to a number of attractions or destinations within a region or crossing many regions. The longest itinerary of a FIT almost covers all of the regions (Table 4.1).

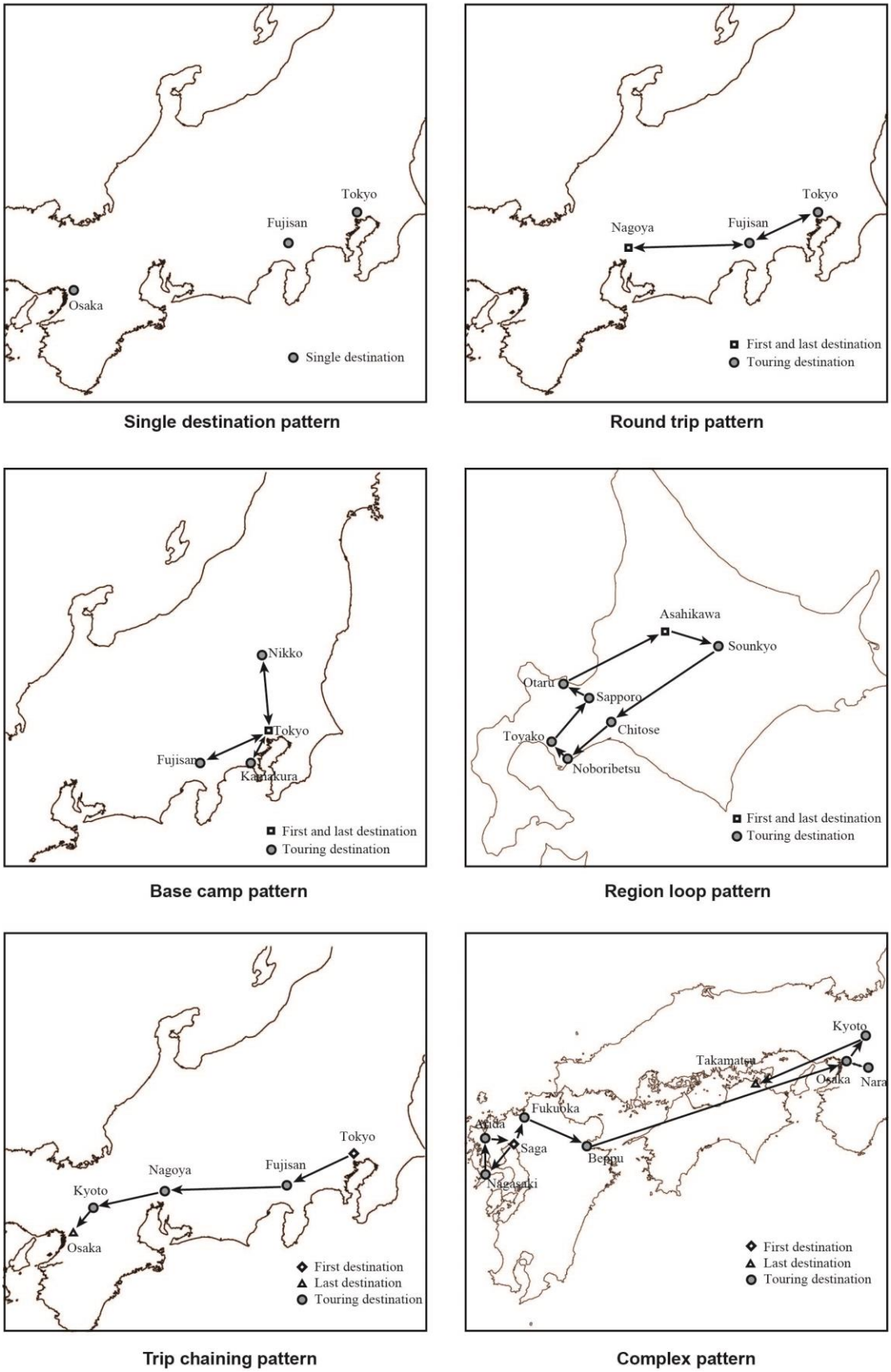



Figure 4.2 Examples of the six itinerary patterns

Table 4.1 Regional distribution of different itinerary patterns

Percentage (%)

| M1 | | M2 | | M3 | |
|---|---|---|---|---|---|
| Kanto-Chubu | 31.48 | Kinki | 43.40 | Kanto-Chubu-Kinki | 27.37 |
| Kanto | 9.26 | Kanto-Chubu | 15.09 | Kanto-Chubu | 13.41 |
| Tohoku-Kanto | 9.26 | Kyushu | 11.32 | Kinki | 11.17 |
| Kanto-Chubu-Kinki | 7.41 | Hokkaido | 7.55 | Kyushu | 10.61 |
| Chubu | 5.56 | Kanto | 7.55 | Hokkaido | 8.38 |
| Kyushu | 5.56 | Shikoku | 5.66 | Chubu | 6.15 |
| Kanto-Kinki | 5.56 | Kanto-Kinki | 3.77 | Chubu-Kinki | 5.03 |
| Hokkaido | 5.56 | Kinki | 1.89 | Tohoku-Kanto | 4.47 |
| Chubu-Kinki | 3.70 | Chubu-Kinki | 1.89 | Hokkaido-Kanto | 2.79 |
| Tohoku | 3.70 | Chugoku | 1.89 | Kanto-Kinki | 2.23 |
| Chugoku-Kyushu | 1.85 | | 100 | Kanto | 1.68 |
| Chugoku | 1.85 | | | Hokkaido-Kanto-Chubu | 1.12 |
| Shikoku | 1.85 | | | Shikoku | 1.12 |
| Kinki-Chugoku | 1.85 | | | Chugoku | 1.12 |
| Kinki | 1.85 | | | Chugoku-Shikoku | 1.12 |
| Kanto-Kyushu | 1.85 | | | Hokkaido-Kanto-Chubu-Kinki | 0.56 |
| Kanto-Kinki-Chugoku | 1.85 | | | Tohoku-Chubu | 0.56 |
| | | | | Kanto-Chubu-Kinki-Kyushu | 0.56 |
| | | | | Kinki-Shikoku | 0.56 |

| M4 | | M5 | |
|---|---|---|---|
| Kanto-Chubu-Kinki | 76.37 | Kanto-Chubu-Kinki | 28.15 |
| Kanto-Kinki | 6.85 | Kanto-Kinki | 11.59 |
| Chubu-Kinki | 3.77 | Hokkaido | 11.26 |
| Kinki | 1.71 | Hokkaido-Kanto | 8.61 |
| Kanto-Chubu | 1.37 | Hokkaido-Kanto-Chubu | 4.64 |
| Hokkaido-Kanto | 1.03 | Kinki | 4.30 |
| Hokkaido-Kanto-Chubu-Kinki | 1.03 | Hokkaido-Kanto-Chubu-Kinki | 3.97 |
| Kanto-Chubu-Kinki-Kyushu | 1.03 | Hokkaido-Kinki | 3.97 |
| Chubu | 1.03 | Chubu-Kinki | 3.64 |
| Hokkaido | 0.68 | Hokkaido-Kanto-Kinki | 3.31 |
| Tohoku-Kanto | 0.68 | Tohoku-Kanto | 1.66 |
| Kyushu | 0.68 | Kinki-Chugoku | 1.66 |
| Hokkaido-Tohoku-Kanto | 0.34 | Kyushu | 1.66 |
| Hokkaido-Kanto-Kinki | 0.34 | Hokkaido-Chubu | 1.32 |
| Hokkaido-Kanto-Chubu-Kinki-Kyushu | 0.34 | Kanto-Chubu-Kinki-Chugoku | 0.99 |
| Hokkaido-Kanto-Chubu-Kinki-Chugoku | 0.34 | Kinki-Kyushu | 0.99 |
| Hokkaido-Chubu | 0.34 | Chugoku-Shikoku | 0.99 |
| Kanto-Kinki-Kyushu | 0.34 | Tohoku-Kanto-Kinki | 0.66 |
| Kanto-Kinki-Shikoku | 0.34 | Kanto-Kyushu | 0.66 |

(Continue…)

| | | | |
|---|---|---|---|
| Kanto-Chubu-Kinki-Shikoku | 0.34 | Kanto-Chubu-Kinki-Chugoku-Kyushu | 0.66 |
| Kinki-Kyushu | 0.34 | Shikoku-Kyushu | 0.66 |
| Kinki-Chugoku | 0.34 | Chugoku-Kyushu | 0.66 |
| Chubu-Kinki-Chugoku | 0.34 | Hokkaido-Tohoku-Kanto | 0.33 |
| | | Hokkaido-Tohoku-Kanto-Chubu-Kinki-Chugoku-Kyushu | 0.33 |
| | | Hokkaido-Kanto-Kinki-Kyushu | 0.33 |
| | | Hokkaido-Kanto-Chubu-Kinki-Chugoku-Kyushu | 0.33 |
| | | Hokkaido-Chubu-Kinki | 0.33 |
| | | Tohoku-Kanto-Kinki-Chugoku | 0.33 |
| | | Tohoku-Kanto-Chubu-Kinki | 0.33 |
| | | Tohoku-Kinki | 0.33 |
| | | Kanto-Kinki-Chugoku-Shikoku | 0.33 |
| | | Kinki-Shikoku | 0.33 |
| | | Kinki-Chugoku-Shikoku | 0.33 |
| | | Chubu | 0.33 |

### 4.2.2 Characteristics of different itinerary patterns

Table 4.2 shows the characteristics of different itinerary patterns. The average number of destinations visited of itineraries is 5.67. Average length of stay of itineraries is 7.43 days and average expense of itineraries is 8500.25 RMB. A one-way between subjects ANOVA was conducted to compare the effect of different itinerary patterns on length of stay, number of visited destinations and expenses. Generally, there is a significant effect of different patterns on all characteristics at the $p<.05$ level.

In terms of the length of stay, the complex pattern (M5) has the longest length of stay (M = 8.49, SD = 2.757) and the single destination pattern (S1) has the shortest. In the multiple destination patterns, the round trip pattern (M1) has the shortest length of stay. The post hoc comparisons using the Tukey HSD test indicated that the complex pattern (M5) is significantly different than the other patterns. However, the base camp pattern (M2), region loop pattern (M3) and Trip chaining pattern (M4) do not significantly differ from each other.

With respect to the number of visited destinations, single destination pattern has only one destination. Round trip pattern (M1) has the smallest number of visited destinations (M = 2.81, SD = 1.388) in multiple destination patterns and it is significantly different than the other patterns. Complex pattern (M5) is also significantly different than other patterns and has the largest number of visited destinations (M = 6.72, SD = 2.204).

As for the expense for different patterns, complex pattern (M5) itinerary has the highest expense (M = 10238.33, SD = 5100.313), round trip pattern (M1) itinerary has the lowest expense (M = 6753.79, SD = 3943.269). The difference between M1 and M3, M2 and M4 are not statistically significant.

Taken together, these results suggest that the complex pattern has the largest number of visited destinations, longest length of stay and highest expense. It is reasonable because the complex pattern is a combination of two or more patterns and in result tourists spend more time and money. On the other hand, although single destination pattern has the shortest length of stay and only one destination, the expense of it is not the lowest. People just visiting one destination are more likely to enjoy a vacation rather than a sightseeing tour. Therefore they pay more attention to enjoy high hospitality quality and abundant cultural and recreational activities. An example is the honeymoon vacation for some free independent tourists. They chose the high rated hotels or resorts, enjoyed

Table 4.2 Characteristics of itinerary patterns of Chinese tourists

| | Length of stay(day) | Number of destinations | Expense (RMB) |
|---|---|---|---|
| Single destination pattern | | | |
| **S1** | 5.71 | 1.00* | 7156.29 |
| Multiple destination pattern | | | |
| **M1** | 6.04 | 2.81* | 6753.79 |
| **M2** | 7.49 | 3.89* | 9272.88 |
| **M3** | 6.69 | 5.36 | 6929.98 |
| **M4** | 7.08 | 5.74 | 8012.11 |
| **M5** | 8.49* | 6.72* | 10238.33 |
| ***F value*** | 23.460 | 62.135 | 15.388 |
| ***F(Sig.)*** | (0.000) | (0.000) | (0.000) |

Note:*means there is a significant difference with all other groups.

S1: Single destination pattern

M1: Round trip pattern

M2: Base camp pattern

M3: Region loop pattern

M4: Trip chaining pattern

M5: Complex pattern

their leisure and did not mind the number of destinations and attractions.

### 4.3 Role and function of destination in itinerary

On the basis of the studies of Lew and Mckercher (2002), Zhu et al. (2010) and Liu et al. (2016), the roles of destinations can be divided into five types (Table 4.3):

**Single destination**

Single destination only exists in single destination pattern. As stated before, it typically requires high reputation and highest requirements for its resources and accessibility.

**Gateway destination**

Gateway destination is the first place in a multiple destination itinerary. At the gateway tourists may form a preliminary impression about the trip which may exert some influence over the experience of subsequent destinations. For an international gateway destination, it requires transportation facilities linking tourist generating regions thus it is necessary to have an international airport or be adjacent to an international airport. In addition, hospitality facilities are very important to gateway destination due to international tourists' accommodation needs in the first day. Ordinarily, gateway destinations are the key cities with traffic hubs and developed economy such as Osaka, Tokyo and Nagoya. However, some small cities located in close proximity to the airport can be a gateway destination. For example, Tsukuba is found as a gateway destination of a FIT itinerary in this study because it is near to Ibaraki airport and can provide accommodation services.

**Egress destination**

An egress destination is the last place visited before returning home in a multiple destination itinerary. Egress destination and gateway destination are a pair of concepts and the gateway destination also plays a role as egress destination usually. Becoming an egress destination is also requiring international airport or be adjacent to an international airport. However, unlike the Gateway destination, even though the function of tourism service facilities is weak, it does not affect a city as an egress destination. Besides the key cities, some cities near to airport but with shopping malls are selected as egress destinations for Chinese tourists. For example, Izumisano and Sennan, which is close to Kansai International Airport and own Rinku Premium Outlets, are the last destinations in some itineraries. Kitahiroshima, which owns Mitsui Outlet Park, is also the

Table 4.3 Different roles of destinations

| | Number | Representative destination |
|---|---|---|
| Single destination | 3 | Tokyo, Osaka, Fujisan |
| Gateway destination | 37 | Osaka, Tokyo, Nagoya, Fukuoka, Sapporo, Kyoto, Asahikawa, Takamatsu, Shizuoka, Chitose |
| Egress destination | 34 | Tokyo, Osaka, Nagoya, Sapporo, Fukuoka, Asahikawa, Shizuoka, Takamatsu, Hiroshima, Narita |
| Hub destination | 50 | Osaka, Tokyo, Sapporo, Nagoya, Fukuoka, Kyoto, Asahikawa, Takamatsu, Hiroshima, Sendai |
| Touring destination | 223 | Kyoto, Fujisan, Nara, Tokyo, Osaka, Otaru, Nagoya, Noboribetsu, Kamakura, Hakone |

last destination for some tourists in Hokkaido.

In 2016 there existed direct air routes between 22 cities in Japan and 38 cities in China and there are only 37 cities can be found as gateway destinations for Chinese tourists in the study. Osaka (Kansai airport), Tokyo (Narita airport) and Nagoya (Chubu airport) are the main gateway and egress destinations which located in central Japan. Sapporo, Shizuoka and Fukuoka are the secondary. Omitama (Ibaraki airport) is also an important egress destination since the non-stop flight route linking Shanghai with Ibaraki was launched. In addition, Asahikawa, Takamatsu, Saga, Okayama and Komatsu play a role of regional gateway destinations as well.

**Hub destination**

Hub destination is defined as a destination which is visited more than once in a multiple destination itinerary (Lew and Mckercher, 2002). In this sense, it can be found in round trip pattern, base camp pattern, region loop pattern and complex pattern. Generally, becoming a hub destination requires transportation facilities that connect other destinations conveniently. In addition, there must be good tourist service facilities to meet the needs of tourists as a tourist hub. Gateway destinations and final destinations can be hub destinations because they often have good transportation facilities and they are more likely to serve as tourist hubs. Touring destinations with good hospitality facilities can also be the hub destinations. The central destination in base camp pattern exhibits the obvious characteristics as a hub destination. Tourists visit this place firstly and use it as the start and finish point for travel activities every day.

**Touring destination**

Touring destination is a place visiting after the first destination and before the last destination. However, if it has been taken as a gateway, egress or hub destination in an itinerary, it is no longer viewed as a touring destination. It can exist in all itinerary patterns that include three or more overnight stopovers. Although some of the touring destination may become the main destination on the trip (e.g. Fujisan), most of them do not necessarily require major transportation and service facilities, or mix of attractions to hold tourists' interests like other destination types. Some small cities which have geographical proximity to metropolis or locate between two main destinations are more likely to be touring destinations. For example, Hamamatsu which is located between Fujisan and Nagoya is treated as a touring destination for GITs. It is noteworthy that a touring destination in one itinerary may play a different role in the other itinerary. For example, usually

Tokyo is a gateway destination in many itineraries but it may also be a touring destination in some itineraries.

From a functional perspective, destination can be divided into two types: Destination with comprehensive function and destination with single function (Table 4.4). Basically, functions of a destination comprise of providing food and beverage, accommodation, natural or cultural attractions, shopping, amusement activities, transportation hub and so on. When tourists utilized two or more functions of a destination, it can be a comprehensive function destination. Conversely, it is just a single function destination. “Single function” is a base on the tourist perspective rather than local perspective and it means that a destination has been a part of tourism products or activities but has potential to generate more economic benefits through extending the length of stay of tourists.

## 4.4 Comparison for GIT and FIT

### 4.4.1 Distribution of destinations

Overall, there are 232 destinations visited by Chinese tourists. Among of them, 102 are for GITs and 203 for FITs.

For GITs, majority of destinations are concentrated in the central Japan (including Kanto, Chubu and Kinki regions), then the central Hokkaido region and Northern Kyushu region. In Tohoku, Chugoku and Shikoku region, only Sendai, Okayama and Takamatsu are the destinations for GITs respectively (Figure 4.3 and Figure 4.4).

Comparatively, the distribution for FITs shows a dispersed pattern on whole Japan. They not only travel to traditional cities and surrounding destinations, but also visit many destinations in Tohoku region, Chugoku region and Shikoku region where there are very few destinations for GITs (Figure 4.4). The majority of destinations in these regions are located along the Tohoku Shinkansen and Sanyo Shinkansen (Figure 4.3).

Table 4.4 Different functions of destinations

| Type | | Representative destination |
|---|---|---|
| Comprehensive function destination | | Tokyo, Osaka, Nagoya, Kyoto, Fujisan |
| Single function destination | food and beverage | Uji, Hida, Kobe, Utsunomiya, Utazu |
| | accommodation | Saitama,Toyohashi, Gamagori, Kakegawa, Hamamatsu |
| | natural or cultural attractions | Otaru, Matsushima, Kamakura, Nikko,Himeji, |
| | shopping | Kitakyushu, Tosu, Gotenba ,Kuwana, Izumisano |
| | transportation | Tomakomai, Niigata, Komatsu, Omitama, Saga |

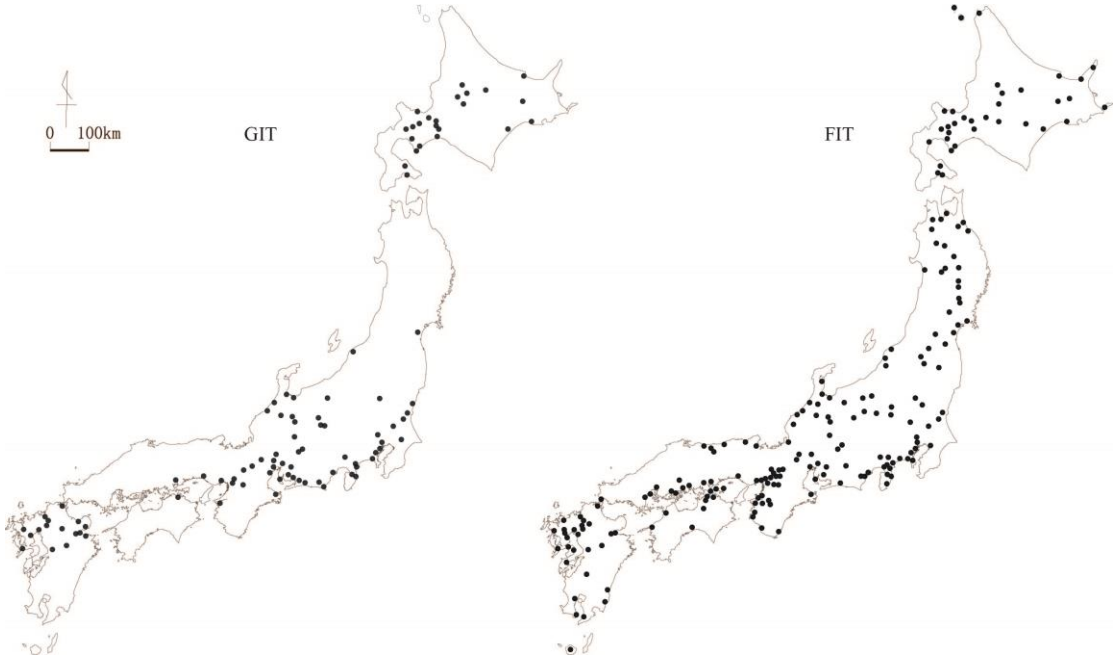



Figure 4.3 Distribution of destinations for GITs and FITs

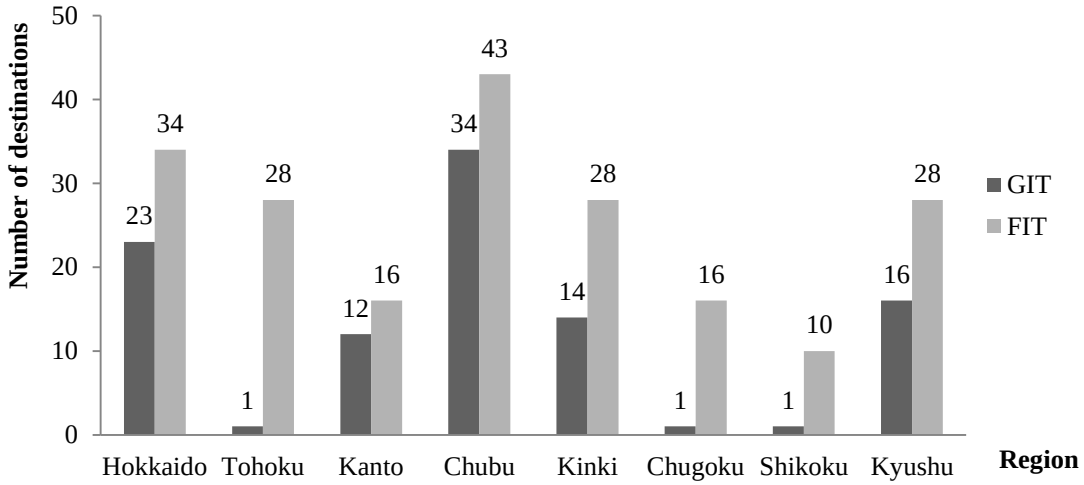



Figure 4.4 Distribution of destinations for GITs and FITs by regions

### 4.4.2 Type of itinerary patterns

Among total 887 itineraries, 429 are GIT itineraries and 458 are FIT itineraries. As presented in Figure 4.5, the pattern S1, M1 and M2 are not very common for both GIT and FIT itineraries. Comparatively, FIT itineraries own more M1, M2 and M5 pattern but less S1, M3 and M4 pattern. What the quantities are most in GIT and FIT itineraries are M4 and M5 respectively.

In terms of the percentage of tourists choosing different itinerary patterns, it shows similar result. FITs prefer to itineraries with roundtrip pattern, base camp pattern and complex pattern (Figure 4.6). A Chi-square test of independence was calculated comparing the frequency of choices for multi destination itinerary patterns in GIT and FIT. A significant interaction was found, $\chi^2$ (4, N = 30100) = 2591.479, p = 0.000.

### 4.4.3 Characteristics of itineraries

Concerning the characteristics of between GIT and FIT itineraries, Table 4.5 shows the differences. Overall, although FITs visit smaller number of destinations, they take longer time in travel and spend more money, which means that the FITs prefer slow-paced, in-depth tours rather than mere sightseeing tours.

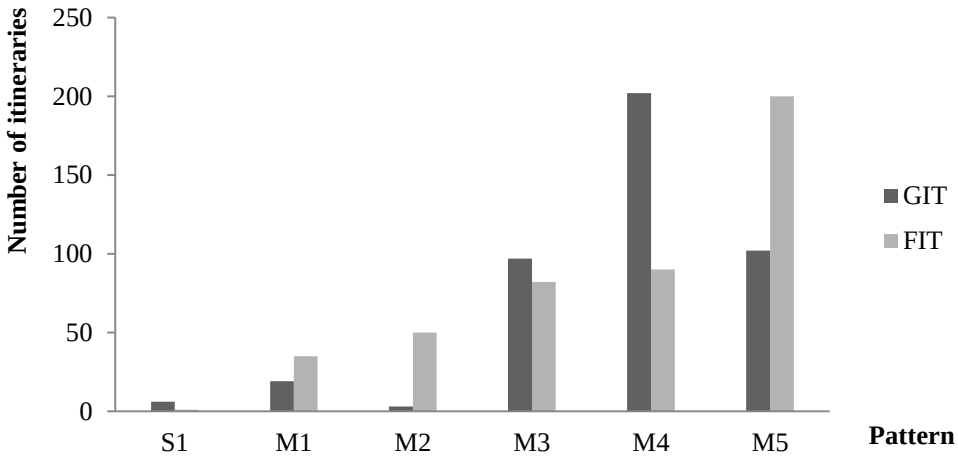



Figure 4.5 Number of different patterns of itineraries

Note: S1: Single destination pattern

M1: Round trip pattern

M2: Base camp pattern

M3: Region loop pattern

M4: Trip chaining pattern

M5: Complex pattern

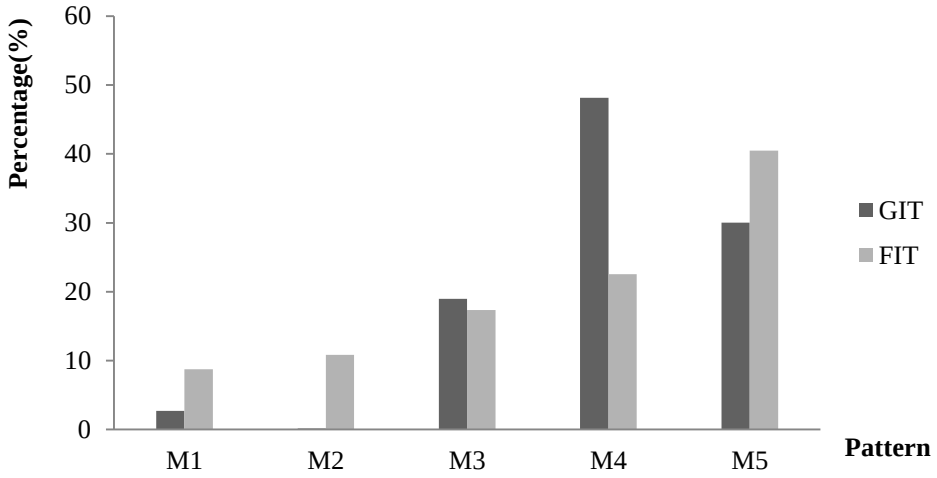



Figure 4.6 Percentage of tourists for choosing multi destination itinerary

Note: S1: Single destination pattern

M1: Round trip pattern

M2: Base camp pattern

M3: Region loop pattern

M4: Trip chaining pattern

M5: Complex pattern

Table 4.5 Differences of characteristics of GITs and FITs

| | Length of stay(day) | Number of destinations | Expense (RMB) |
|---|---|---|---|
| **GIT itineraries** | 6.31 | 5.91 | 6245 |
| **FIT itineraries** | 8.49 | 5.44 | 8748 |

# V Network pattern of Chinese tourist flows

## 5.1 Distribution of tourist flows

### 5.1.1 Characteristics of distribution of tourist flows

Based on the analysis of tourist itineraries, the map of general geographical distribution of Chinese tourist flow in Japan is constructed. There are 977 directed node connections for the whole tourist flow network while 776 for the FIT flow network and 386 for GIT flow network. As displayed in Figure 5.1, the size of the line represents the relative volume of the tourist flows. According to flow difference, the connection scale of tourist flows between the nodes is divided into three categories: a strong connection represents tourist flow with more than 10% tourists, a common connection represents tourist flow with 1%-10% tourists and a weak connection represents tourist flow with below 1% tourists.

In accordance with distribution of destinations, the distribution of Chinese tourist flows is disequilibrium, characterized by an extensive dispersion with localized concentrations from an overall perspective. Both GIT flows and FIT flows are mainly concentrated in the central Japan (including Kanto, Chubu and Kinki region) and then the Hokkaido and Kyushu region. “Osaka-Kyoto” and “Fujisan-Tokyo” are the node connections with the largest size of tourist flows.

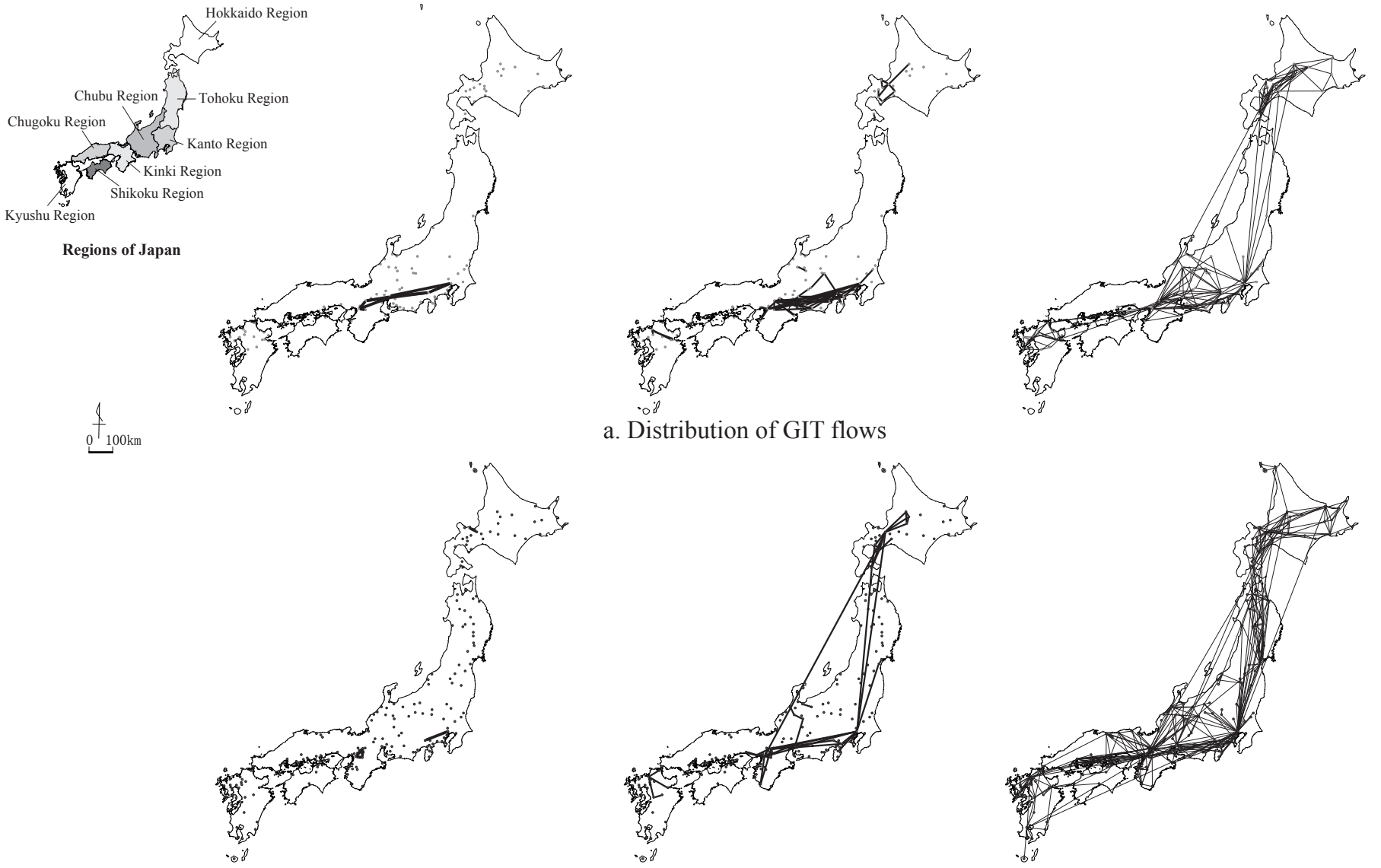



Figure 5.1 Geographical distribution of Chinese tourist flows in Japan

### 5.1.2 Differences between GIT and FIT flows

Compared to GITs, the FIT flows show different characteristics.

Firstly, the spatial distribution of FIT flows is more extensive. Since FITs can travel freely over whole Japan, the FIT flows not only distribute in the central Japan but also in more regions, such as Tohoku region, Chugoku region and Shikoku region where there are very few tourist flow. In addition, FIT flows are found more in Southern Kyushu areas and Eastern Hokkaido areas (Figure 5.1).

Secondly, the volume of GIT flows is more concentrated. In other words, for GIT network, a large number of tourist flows mainly concentrated in a small amount of destinations (Table 5.1). For example, when the relative volume of tourist flow is more than 1%, there are 41 destinations involved for both GIT and FIT network. However, the accumulative ratio of tourist flow is 88.07% in GIT network but only 66.00% in FIT network (Table 5.1).

Thirdly, the link modes of FIT flows are more diversified. FITs show diversity in transportation choice. Tour bus is the main transportation way for GITs although there are some ferry routes in Seto Inland Sea and airline routes between Hokkaido region and other regions are used. The transportation choice for FITs is obviously freer and diverse. When train and public bus are mainly used within regions by FITs, Bullet train (Shinkansen) and airplanes are used for their inter region movement. More domestic airlines in Japan are used by FITs, such as air routes of Fukuoka-Tokyo, Nagoya-Sapporo, and Osaka-Hakodate.

## 5.2 Nodes structure

### 5.2.1 Nodes structure for whole network

Based on the dichotomized matrix, the indicators of network analysis for the whole tourist flow network are calculated by UCINET 6.6 and the results are shown in Table 5.2.

The indicator of degree centrality shows that Tokyo, as the capital city and top brand of Japan tourism, is the tourist flow distribution center in the network which has the highest degree centrality. It keeps most connections with other tourist destinations and has the strongest aggregation function. Osaka and Kyoto, as the most famous urban tourism destination and cultural and historical destination in Japan respectively, both have very high degree centrality just behind Tokyo.

Table 5.1 Characteristic of tourist flow network in different relative volume

| | Relative volume of tourist flow (V) | Number of Node | Number of Node connection | Accumulative ratio of tourist flow (%) |
|---|---|---|---|---|
| GIT | | | | |
| | V>10% | 6 | 13 | 54.82 |
| | V>1% | 41 | 86 | 88.07 |
| | V>0.5% | 53 | 133 | 93.68 |
| | V>0.2% | 69 | 207 | 97.73 |
| | V>0% | 102 | 386 | 100 |
| FIT | | | | |
| | V>10% | 7 | 9 | 27.59 |
| | V>1% | 41 | 93 | 66.00 |
| | V>0.5% | 74 | 187 | 77.56 |
| | V>0.2% | 125 | 401 | 90.21 |
| | V>0% | 203 | 776 | 100 |

Table 5.2 Structural indicators of nodes in whole tourist flow network

| | Degree centrality | | | | Closeness centrality | | | Betweenness centrality | |
|---|---|---|---|---|---|---|---|---|---|
| | Outdeg | Indeg | Total | | OutClose | InClose | Total | | |
| Tokyo | 52 | 54 | 106 | Tokyo | 0.43 | 0.49 | 0.92 | Tokyo | 20993.33 |
| Osaka | 46 | 47 | 93 | Osaka | 0.44 | 0.47 | 0.91 | Osaka | 17279.55 |
| Kyoto | 49 | 40 | 89 | Kyoto | 0.42 | 0.42 | 0.84 | Kyoto | 8583.57 |
| Fujisan | 26 | 34 | 60 | Nagoya | 0.38 | 0.41 | 0.79 | Fukuoka | 6496.58 |
| Nagoya | 22 | 24 | 46 | Fujisan | 0.37 | 0.40 | 0.77 | Fujisan | 4333.83 |
| Sapporo | 21 | 23 | 44 | Sapporo | 0.36 | 0.40 | 0.77 | Sapporo | 4272.83 |
| Fukuoka | 20 | 17 | 37 | Noboribetsu | 0.36 | 0.39 | 0.75 | Sendai | 4059.46 |
| Nara | 17 | 16 | 33 | Nara | 0.36 | 0.39 | 0.75 | Kanazawa | 2779.47 |
| Sendai | 15 | 17 | 32 | Hakone | 0.36 | 0.38 | 0.74 | Aomori | 2468.07 |
| Noboribetsu | 14 | 16 | 30 | Shizuoka | 0.36 | 0.38 | 0.74 | Kagoshima | 2446.38 |
| Kanazawa | 12 | 13 | 25 | Kagoshima | 0.36 | 0.38 | 0.73 | Nagoya | 2374.83 |
| Hakodate | 11 | 13 | 24 | Fukuoka | 0.37 | 0.36 | 0.73 | Hiroshima | 2281.04 |
| Hiroshima | 9 | 15 | 24 | Kamakura | 0.36 | 0.37 | 0.73 | Beppu | 2271.97 |
| Otaru | 11 | 12 | 23 | Kobe | 0.37 | 0.36 | 0.73 | Takamatsu | 2235.35 |
| Aomori | 11 | 11 | 22 | Kanazawa | 0.34 | 0.38 | 0.72 | Kumamoto | 1908.85 |
| Kobe | 12 | 10 | 22 | Sendai | 0.35 | 0.37 | 0.72 | Nara | 1786.39 |
| Chitose | 10 | 11 | 21 | Yokohama | 0.35 | 0.37 | 0.72 | Noboribetsu | 1567.46 |
| Asahikawa | 11 | 10 | 21 | Hamamatsu | 0.33 | 0.38 | 0.71 | Asahikawa | 1351.58 |
| Hakone | 12 | 9 | 21 | Himeji | 0.33 | 0.38 | 0.71 | Chitose | 1320.41 |
| Takayama | 9 | 12 | 21 | Hakodate | 0.32 | 0.39 | 0.71 | Kamakura | 1302.95 |
| Mean | 4.21 | 4.21 | 8.41 | | 0.28 | 0.29 | 0.57 | | 542.26 |
| S.D. | 6.55 | 6.62 | 13.09 | | 0.05 | 0.06 | 0.10 | | 1985.20 |

(Continue……)

Note:

(1) Only the first 20 nodes are list here.

(2) The value to assign undefined distances was defined as the max observed distance plus 1 when the closeness centrality was calculated.

(3) Cut off value C >0%.

Closeness centrality reveals the extent to which a particular destination is reachable from and to other destinations (Shih, 2006). Destinations Tokyo and Osaka have the highest in-closeness centrality because of their network position as gateway destination for tourists. In addition, destinations around Tokyo and Osaka such as Fujisan and Kyoto also possess high in-closeness. As for out-closeness centrality, Osaka still has the highest value. Nagoya and Sapporo, resulting from its function as gateway destination, also possess high out-closeness.

The rating of betweenness centrality in the tourist flow network ranges from 0 to 20993, causing the standard deviation to be 1,985, exceeding the mean value 542 greatly. Therefore considerable variation exists in the betweenness centrality of this network. Still Tokyo has the highest betweenness centrality and act as an irreplaceable mediator among different regions. In addition, Osaka, Kyoto, Fujisan and regional key cities such as Fukuoka, Sapporo and Sendai also have high betweenness centrality.

In the light of previous studies (Lew and McKercher, 2002; Liu et al., 2012) and according to centralities of nodes (Table 5.2), a preliminary categorization on 232 nodes in Chinese tourist flow network is proposed. Destinations can be generalized into five types: core node, secondary core node, important node, common node and attached node. Depending on their location within the overall trip itinerary, places can exhibit characteristics of one or more destination types: gateway destination, egress destination, touring destination and hub destination (Lew and McKercher, 2002). From the perspective of function, some of nodes are destinations with single function (only for sightseeing, shopping, accommodation or transportation) and some are destinations with comprehensive functions. Types and characteristics of nodes are summarized in Table 5.3.

Tokyo, Osaka, Kyoto and Fujisan are the core nodes. Although Fujisan and Kyoto are not exclusively traffic hubs, they are tourists' hubs and distribution centers of whole network, which control the transferability of relative tourist flows extensively. They are great attractions to tourists who come to Japan for the first time. Nagoya, Sapporo, Fukuoka, Nara and Sendai are the secondary core nodes. These destinations also own gateway and egress functions, which control the entrance and exit of tourist flows and have potential to be the tourists' hub and distribution center.

Table 5.3 Types and characteristics of nodes in Chinese tourist flow network

| Type | Nodes | Centrality Characteristics | Role and function |
|---|---|---|---|
| Core node | Tokyo,Osaka,Kyoto,Fujisan | Highest and balanced centralities | Tourist distribution center of whole network;<br>Most important gateway and egress destination of Japan;<br>Agglomeration of comprehensive facilities and world class tourist attractions. |
| Secondary core node | Nagoya, Sapporo, Fukuoka, Nara, Sendai | Centralities are second only to core node | Most important gateway and egress destination of Japan;<br>Information and transport center;<br>Agglomeration of diversified attractions and tourist facilities. |
| Important node | Noboribetsu, Kanazawa, Hakodate etc. (16 destinations) | All centralities are relatively higher | Regional hub of the network;<br>Important gateway and egress way or destination of region;<br>Important touring destination. |
| Common node | Yokohama, Shizuoka, Himeji etc. (36 destinations) | All centralities are relatively lower | Common touring destination;<br>Agglomeration of attractions with regional characteristics;<br>Single function destination. |
| Attached node | Kyogoku, Muroran, Toyama etc. (171 destinations) | Centralities are the lowest and only one or two tourist flow that was appended to a certain destination. | Touring destination or small gateway and egress destination;<br>Single function destination(for only sightseeing, accommodation, shopping, or transportation) |

The important nodes include 16 destinations, which are regional hubs of the network or important touring destinations. Their tourist flow linkages concentrate in limited number of destinations with a certain distance and resource types and the hub functions they carried are confined. Among them Hiroshima and Takamatsu are important gateway and egress destinations of the Chugoku and Shikoku region respectively. Common nodes include 36 destinations which mainly depended on core or important nodes and their roles are limited as touring destinations. Attached nodes include 171 destinations. They are attached to one or two destinations and act as single function destinations. For instance, Omitama and Saga are gateway destinations with small airports. Toyota and Jozankei are places just for staying night of tourists.

### 5.2.2 Differences between GIT and FIT

For comparison, the values of node degree centrality of GITs and FITs network are calculated and presented in Table 5.4, which are based on the 102×102 GIT dichotomized matrix and 203×203 FIT dichotomized matrix. The similarity and differences are summarized as followings:

Firstly, in terms of the absolute value of degree centrality, most nodes in FIT network have higher degree centrality than the nodes in GIT network. The average value of degree centrality of nodes in FIT network a slightly higher than that in GIT network.

Secondly, from a relative importance perspective, the node Tokyo, Kyoto, and Osaka are the most important destinations for both the GITs and FITs. However, the destination Fujisan is not ranked within the most important destinations for FITs.

In addition, regional key cities such as Fukuoka (Kyushu Region), Sendai (Tohoku Region), Hiroshima (Chugoku Region), and the cities with small international airports such as Hakodate, Aomori, Takamatsu and Asahikawa are more important to FITs.

## 5.3 Network pattern

### 5.3.1 Characteristics of network

In terms of the structural characteristics of the whole network (Table 5.5), there are 232 nodes in the whole tourist flow network and the diameter of this network is 8. The density of the tourist flow network is 0.018. Theoretically, a network with 232 nodes should possess 53592 link relationships. However, only 977 link relationships exist and thus, the network density is considerable low.

Table 5.4 Comparison of node degree centrality for GIT and FIT network

| | GIT | | | | FIT | | |
|---|---|---|---|---|---|---|---|
| | Outdeg | Indeg | Total | | Outdeg | Indeg | Total |
| Fujisan | 23 | 31 | 54 | Tokyo | 45 | 49 | 94 |
| Kyoto | 28 | 21 | 49 | Osaka | 39 | 39 | 78 |
| Tokyo | 24 | 20 | 44 | Kyoto | 36 | 28 | 64 |
| Osaka | 19 | 18 | 37 | Sapporo | 19 | 22 | 41 |
| Nagoya | 15 | 14 | 29 | Nagoya | 19 | 20 | 39 |
| Sapporo | 13 | 13 | 26 | Fukuoka | 20 | 17 | 37 |
| Nara | 13 | 9 | 22 | Sendai | 15 | 16 | 31 |
| Toyako | 7 | 11 | 18 | Fujisan | 12 | 16 | 28 |
| Otaru | 7 | 10 | 17 | Kanazawa | 12 | 12 | 24 |
| Shizuoka | 9 | 8 | 17 | Hiroshima | 9 | 15 | 24 |
| Hamamatsu | 7 | 10 | 17 | Noboribetsu | 11 | 12 | 23 |
| Noboribetsu | 8 | 8 | 16 | Hakodate | 10 | 13 | 23 |
| Hakone | 8 | 7 | 15 | Aomori | 11 | 11 | 22 |
| Chitose | 6 | 8 | 14 | Kobe | 11 | 10 | 21 |
| Shirakawa | 6 | 6 | 12 | Kamakura | 11 | 8 | 19 |
| Ise | 6 | 6 | 12 | Nara | 9 | 10 | 19 |
| Asahikawa | 7 | 4 | 11 | Takamatsu | 11 | 8 | 19 |
| Takayama | 5 | 6 | 11 | Kumamoto | 9 | 10 | 19 |
| Nakatsugawa | 5 | 6 | 11 | Asahikawa | 9 | 9 | 18 |
| Toyohashi | 5 | 6 | 11 | Himeji | 10 | 8 | 18 |
| Mean | 3.78 | 3.78 | 7.57 | | 3.82 | 3.82 | 7.64 |
| S.D. | 4.89 | 4.82 | 9.58 | | 5.65 | 5.70 | 11.27 |

Note:

(1) Only first 20 nodes are listed here.

(2) Cut off value C >0%.

Table 5.5 Indicators of network

| | Size | Diameter | Density | Degree centralization | | Betweenness centralization |
|---|---|---|---|---|---|---|
| | | | | Out | In | |
| **Whole network** | 232 | 8 | 0.018 | 0.208 | 0.216 | 38.66% |
| **GIT** | 102 | 8 | 0.037 | 0.242 | 0.272 | 32.63% |
| **FIT** | 203 | 9 | 0.019 | 0.205 | 0.225 | 40.31% |

Note:

(1) Cut off value C >0%.

Table 5.5 also shows the main results of comparative analysis for GIT and FIT network. The comparison clearly reveals a larger size, longer diameter and lower density for the FIT network which means the FIT network is looser compared to GIT network overally. Notably, analysis of the structure of network indicates the higher degree centralization of the GIT network compared to FIT network. The result confirms that GITs appear to visit and combine a smaller number of destinations. However, the FIT network shows a higher betweenness centralization which means FITs are more dependent on some hubs. It is probably because of the different transportation way for FITs and GITs. For GITs, the tour bus arranged by travel services is the main way so that they do not need to consider the transfer hubs while the traffic hubs are more used by FITs since they rely heavily on local public transportation system.

For more in-depth analysis of the structure of the whole network, it can be divided into five sub regions according to the nodes' structure and position: Sub-region 1 (Kanto-Chubu-Kinki), Sub-region 2 (Hokkaido), Sub-region 3 (Kyushu), Sub-region 4 (Tohoku) and Sub-region 5 (Chugoku-Shikoku). This breakdown allows for a more detailed picture of the sub patterns comprising the overall tourist flow pattern created. A comparison of indicators of five sub regions is also presented in Table 5.6. A comparison of closeness centralization is not possible in this research as a number of isolates appeared in the network. Closeness is a distance measure and, thus, cannot be calculated if a network is not connected (Hwang, 2006).

In Hokkaido and Kyushu Region, FIT networks have higher degree centralization, indicating that a small number of nodes account for a large number of connections and all travel occurs through a small number of hubs within these FIT sub networks. The considerable high betweenness centralization means that the FITs rely heavily on the traffic transfer function of central destination Sapporo and Fukuoka.

In contrast, the degree and betweenness centralization in Sub-region 1 (Kanto-Chubu-Kinki) are lower for FIT network. This region owns the most popular tourist destinations and most highly developed transportation systems therefore FITs have more choices for destinations and transportation ways. In sub region Tohoku and Chugoku-Shikoku Region, only FIT networks exist since only Sendai, Okayama and Takamatsu in these regions became the destinations for GITs and cannot form the network.

Table 5.6 Comparison of network indicators for sub regions in GIT and FIT network

| | Size | Diameter | Density | Degree centralization | | Betweenness centralization |
|---|---|---|---|---|---|---|
| | | | | Out | In | |
| **GIT network** | | | | | | |
| **Sub-region 1** Kanto-Chubu-Kinki | 60 | 7 | 0.067 | 0.398 | 0.467 | 32.13% |
| **Sub-region 2** Hokkaido | 23 | 6 | 0.166 | 0.302 | 0.349 | 24.20% |
| **Sub-region 3** Kyushu | 16 | 6 | 0.171 | 0.173 | 0.244 | 20.70% |
| **FIT network** | | | | | | |
| **Sub-region 1** Kanto-Chubu-Kinki | 87 | 6 | 0.041 | 0.288 | 0.264 | 30.22% |
| **Sub-region 2** Hokkaido | 34 | 7 | 0.110 | 0.387 | 0.418 | 40.85% |
| **Sub-region 3** Kyushu | 28 | 6 | 0.106 | 0.428 | 0.390 | 54.61% |
| **Sub-region 4** Tohoku | 28 | 5 | 0.090 | 0.329 | 0.368 | 34.61% |
| **Sub-region 5** Chugoku-Shikoku | 26 | 6 | 0.103 | 0.226 | 0.350 | 22.69% |

Note:

(1) Cut off value C >0%.

### 5.3.2 Network pattern

When combining the result of distribution of tourist flow, the structure of nodes and the characteristics of sub-regions, the type of sub regions and spatial pattern of whole network can be summarized. The sub network structure is judged (agglomeration, equilibrium or dispersion) according to the result whether the difference between in-degree centralization and out-degree centralization is less than 10% (Table 5.7).

There may be six theoretical types of network pattern on inter destinations level: Multi center agglomeration structure, Multi center equilibrium structure, Multi center dispersion structure, Single center equilibrium structure, Single center agglomeration structure and Single center dispersion structure.

As presented in the Table 5.8 and Figure 5.2 (A schematic diagram for network structure), the tourist flow network pattern is characterized by followings:

(1) The sub networks of GIT and FIT present different patterns. The GIT network comprises three sub regions: Sub-region 1 owns four centers: Tokyo, Osaka, Fujisan and Kyoto, showing a multi center agglomeration structure. Sub-region 2 shows characteristic of agglomeration structure with only one center (Sapporo) in the network. Sub-region 3 has two nodes (Beppu and Fukuoka) as its centers, showing multi center agglomeration structure. Comparatively, the FIT network comprises five sub regions and different patterns. Sub-region1, 2 and 3 reveal multi center equilibrium, single center equilibrium, and single center agglomeration structure respectively. Sub-region 4 has one center (Sendai), presenting a single center agglomeration structure due to greater in-degree centralization. Sub-region 5 still display an agglomeration structure but with two important nodes as its centers (Hiroshima and Takamatsu).

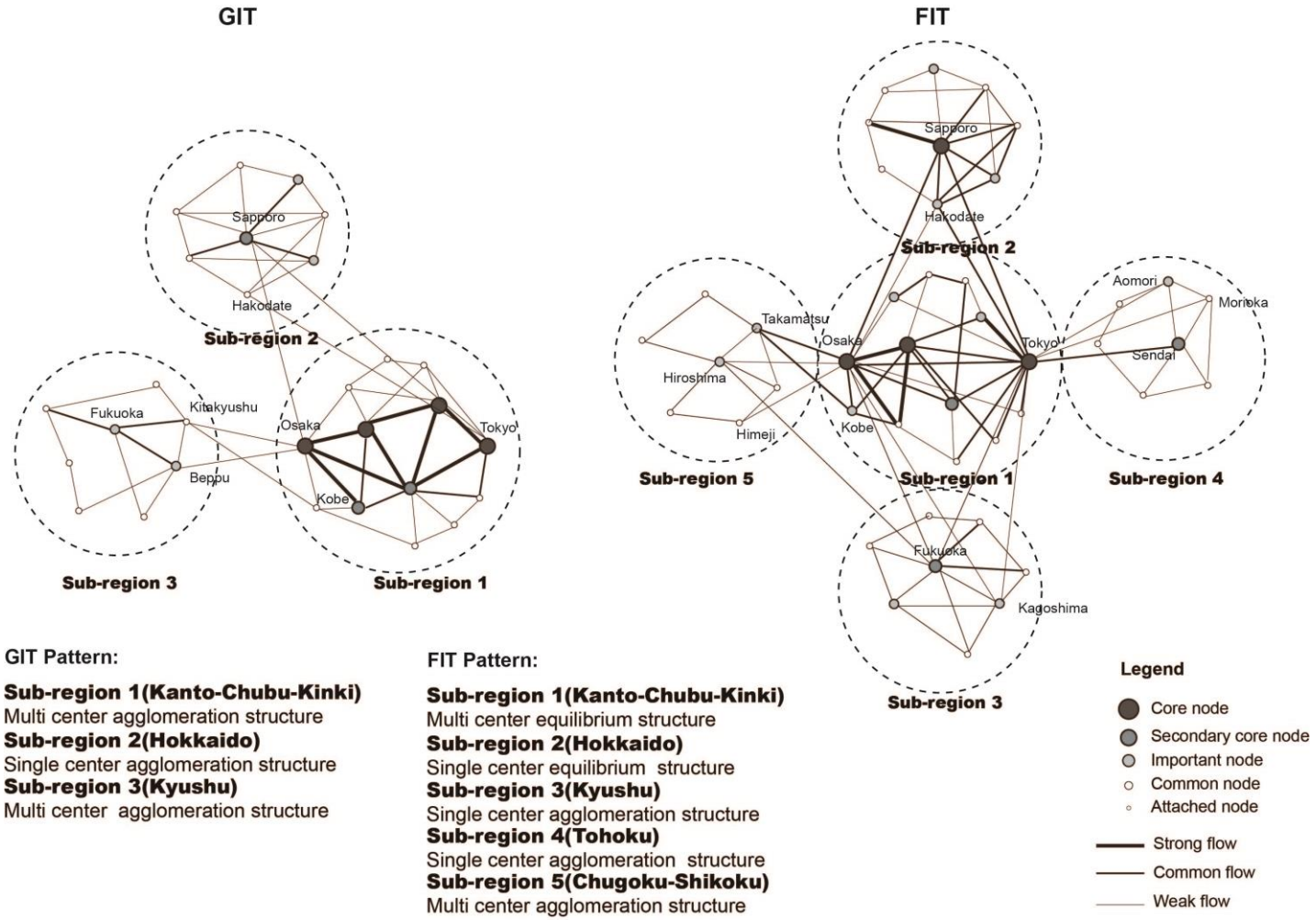
(2) Tourism flows with different intensity present hierarchical characteristic. This applies to both GIT and FIT networks. A large number of tourist flows are confined to nodes within a sub region. Strong flows mainly exist between core nodes and secondary core nodes or surrounding nodes. The tourist flow between Tokyo and Fujisan has the largest size. Common flows exist mainly among secondary core nodes, important nodes and common nodes. Weak flows are comparative dispersion, existing among nodes with different levels.

Table 5.7 Types of tourist flow network

| | **Agglomeration** | **Equilibrium** | **Dispersion** |
|---|---|---|---|
| $S=100\%(C_{D,in}-C_{D,out})/C_{D,in}$ | S>10% | $-10\% \leq S \leq 10\%$ | S<-10% |

Table 5.8 Types of sub regions in GIT and FIT network

| | Type of network | Center |
|---|---|---|
| **GIT network** | | |
| Sub-region 1 Kanto-Chubu-Kinki | Agglomeration | Fujisan, Tokyo, Osaka, Kyoto |
| Sub-region 2 Hokkaido | Agglomeration | Sapporo |
| Sub-region 3 Kyushu | Agglomeration | Beppu, Fukuoka |
| **FIT network** | | |
| Sub-region 1 Kanto-Chubu-Kinki | Equilibrium | Tokyo, Osaka, Kyoto |
| Sub-region 2 Hokkaido | Equilibrium | Sapporo |
| Sub-region 3 Kyushu | Agglomeration | Fukuoka |
| Sub-region 4 Tohoku | Agglomeration | Sendai |
| Sub-region 5 Chugoku-Shikoku | Agglomeration | Hiroshima, Takamatsu |




**GIT Pattern:**

**Sub-region 1(Kanto-Chubu-Kinki)**
Multi center agglomeration structure
**Sub-region 2(Hokkaido)**
Single center agglomeration structure
**Sub-region 3(Kyushu)**
Multi center agglomeration structure

**FIT Pattern:**

**Sub-region 1(Kanto-Chubu-Kinki)**
Multi center equilibrium structure
**Sub-region 2(Hokkaido)**
Single center equilibrium structure
**Sub-region 3(Kyushu)**
Single center agglomeration structure
**Sub-region 4(Tohoku)**
Single center agglomeration structure
**Sub-region 5(Chugoku-Shikoku)**
Multi center agglomeration structure

Figure 5.2 Pattern of Chinese tourist flow network in Japan

(3) The tourism connections between sub regions are considerable weak. The connections within FIT network are stronger than GIT network. As discussed previously, FITs have more inter regional movement and more transportation choices. It can be found that FIT flows between adjacent regions rely on the Shinkansen such as the Tohoku Shinkansen between Kanto Region and Tohoku Region, the Sanyo Shinkansen between Chugoku Region and Kinki Region. The connection between distant regions relies on airlines such as the air routes between Sapporo and Osaka or Sapporo and Tokyo. In addition, in GIT network some ferry routes exist between Sub-region 1 and Sub-region 3 (ferry route from Beppu to Osaka), Sub-region 2 and Sub-region 4 (ferry route from Tomakomai to Sendai). Generally, the weak connection is not only because traffic links between regions are insufficient, but also the travel time and cost restrict the long haul travel in Japan.

Overall, this network structure of Chinese tourist flows seems rather consistent with the model of Chained Destination Region model (Dredge, 1999) and Destination systems and flow patterns in Nanjing (Jin et al., 2014). However, the results in this study are more focused on the inter destination level and network perspective and integrated the results of literatures about tourist flow itinerary patterns. Theoretically, there may be another two models: multi center dispersion and single center dispersion structure. The tourist flows from other countries maybe display different structures from the results of this study.

# VI Factors influencing tourist flows

In this chapter, based on the content analysis of online diary text and field work at travel services, factors influencing tourist flows are analyzed qualitatively. Since all the GIT itineraries are dominated by travel services (although they need to consider the demand of tourists) while FIT itineraries are dominated by tourists themselves, different influences of factors on GIT and FIT flows are also discussed.

## 6.1 Identifying factors influencing tourist flows

### 6.1.1 Cost benefit

Cost-benefit consideration runs through the process from GIT itinerary planning to sell and is a determining factor when the travel services launched the travel products (itineraries). The statements of some managers of travel services identified that the choices of destination, transportation way, accommodation place of GIT itineraries are all taken into the cost benefit calculation which impact the characteristics of GIT itineraries.

For example, the single function destinations such as Toyohashi, Gamagori, Kakegawa, mentioned in foregoing paragraph are selected as destinations of GIT itineraries because they can provide more economic accommodation options comparing to Nagoya or places around Fujisan which reduce the cost of travel services. On the other hand, many destinations in Tohoku, Shikoku and Chugoku region are not considered in the GIT itineraries because scale economies effect is not obvious and they are not profitable for travel services.

Cost benefit also affects the link way of destinations. For GIT, tour bus is an easier and economic transportation way in most itineraries. Some exceptions are shown in the connection between sub regions mentioned before. For example, ferry is utilized between Beppu and Osaka because the ferry is not only a transportation way but an accommodation option. Tourists are able to stay overnight in the ferry without booking other hotels which can save the cost for travel services.

Itinerary pattern is also impacted by cost benefit consideration. As shown in the previous analysis, there are very few base camp patterns in GIT itineraries because the base camp pattern needs more transportation expense between same two destinations. Contrary, region loop pattern and trip chaining pattern are found more in GIT itineraries. It needs no round trip to gateway

destination. Consequently, travelers may visit several destinations in a GIT itinerary. Meanwhile, travel services can reduce the overall cost of itineraries and maximize the use of money and other resources.

For FITs, it is hard to make cost benefit analysis although financial budget or economic rationality can be viewed as a factor influencing tourist movement. They may adjust their destinations or itineraries according to their expecting expenses on transportation, accommodation and shopping. However, very few of FITs in this study considered the money as a constraint to their travel in Japan. A reasonable explanation is that if they can get the individual tour visa, they have met the requirements of the visa which means they have a sufficient level of financial capability. Meanwhile, even if there is a financial constraint, a tourist can reduce the activities and lower the cost on accommodation by choosing home stay or low star rated hotel rather than cancelling the destinations or changing itinerary.

### 6.1.2 Tourist condition

#### (1) Travel purpose

Travel purposes' effects on tourist flow have been noted in several studies. Self purposes and benefits seeking dominate the decision-making of tourists and the characteristics of tourist flow. McKercher and Lew (2004) showed that tourists with special purpose tend to confine their activities to destination that relate to the specialized preference or reasons, while the generalist sightseeing tourists tend to travel more widely with no clearly evident pattern. Namely, individual travelers with multiple purposes will normally visit more places for goal satisfaction, and a more extensive movement pattern will be expected (Tideswell and Faulkner, 1999).

Travel purpose is a fundamental factor for both GITs and FITs. Travel services need to conduct market surveys and consider tourists' purposes before they plan and sell GIT itineraries. FITs plan itineraries according to their purposes. Different purposes matching up with destination resources generate different destination choices and trip arrangement.

From the tourists' perspective, they seek for leisure or pleasure, learning knowledge, self-fulfillment, visiting friends and relatives and honeymoon vacation. Most of tourists related their specific purposes to different tourism types which include natural sightseeing (cherry blossoms viewing, etc.), history/traditional culture sightseeing, content tourism (induced by films, TV dramas, literary works or animation), shopping tourism and Japanese life style experience

(experiencing hot spring, kimono, Japanese food, minshuku, railway, et al.). Therefore, lots of GIT itineraries are labeled with theme tour such as “Sakura Tour” or “Onsen Tour”. Similarly, FITs always associate their interests with special destinations. For example, if they are interested in Japanese traditional culture, Kyoto and Nara are the primary destinations for their journey.

*Kyoto and Osaka are the places I have always wanted to travel to and the place where I can experience the cultural customs of Japan. I don't want to turn Japan's journey into a shopping tour, but only for the local history and folk custom. (ID: 5505230, itinerary: Osaka-Kyoto-Nara-Oska)*

*Because one of the themes of this trip is experiencing hot spring in Japan I chose the Toyako Onsen(hot spring) , so I stayed in Sapporo for two nights and Toyako for another two nights, and it is no need for frequent hotel changes. (ID: 3259979, itinerary: Sapporo-Otaru-Toyako-Muroran-Saporo)*

However, it is rarely just one thing that causes people to seek tourism experiences. The tourists want to seek more than one benefit and satisfy a set of different travel purposes when they visit a foreign country. Many tourists expressed their multi purposes in travel to Japan. Multiple-benefit seeking is an important characteristic which causes visiting many different destinations during one trip and a complicated tourist flow pattern. This can explain why the single destination pattern accounts only very small proportion in both GIT and FIT itineraries.

**(2) Time budget**

All tourist flows are influenced by the time budget available to tourists and how they choose to spend that time. According to McKercher and Lew (2004), the more time one has, the more intervening destinations one is likely to visit. Meanwhile, if the tourist relies on international air transport, time is usually fixed once the travel arrangements have been made (Lau and McKercher, 2007). Zoltan (2014) indicated that people with limited time budgets tend to adopt a more resource-oriented approach to travel and want to get to the destination or attraction as quickly as possible. Those with larger time budgets tend to adopt more of a commodity-oriented approach and will engage in touring, sightseeing, and exploration. In this sense, total time availability exerts a significant impact on spatial movement of tourists to and through destinations.

As a limited resource in the course of a trip, time constrains the tourists’ length of stay in destinations and the number of destinations visited in one trip. The GIT itinerary needs to consider

more time constraint of members in a tour group thus it usually has shorter length of stay as mentioned in section 4.4.3.

Many FITs mentioned that time is a key factor when they planned the trip. Travel time is usually fixed once the trip plans have been made. In the context of fixed time, time rationing is important for tourists' trip arrangement, which include time spent at destination and the transit times spend at the transportation between destinations. Many tourists increase or decrease the numbers of destinations according to their overall time length and then seek to maximize time spent at destination and minimize transit times by transport choice of high speed railway (Shinkansen).

*We had only 8 days for travel. At the beginning we wanted to take a tour from Kanto Region to Kansai Region. However when made the trip plan we found that there are a lot of places worth visiting in Kanto, and the time is not enough. Coupled with that this is the first time to go to Japan, so we decided put the focus in Kanto Region. (ID: 5730806, itinerary: Tokyo-Kamakura-Tokyo-Fujisan-Tokyo-Hakone-Tokyo)*

*As the second largest city in Japan, Osaka is not as prosperous as Tokyo, nor as historic as Kyoto. As early as the design of the trip, I was considering whether I had to visit Osaka. Finally, I added it in our trip may be just because we have enough time. (ID: 5560097, itinerary: Osaka-Kyoto-Nara-Tokyo-Fujisan-Tokyo-Kamakura-Tokyo)*

**(3) Travel companion**

Travel companion or type of travel group linked to the length of tour and number of destinations in the trip. Although individual travel is popular for young people, for most Chinese tourists, travel with companions (friends, family, and couples) is prevalent.

McKercher and Lew (2004) mentioned that families with young children show a strong preference for short trips, regardless of the travel time available. Families with older children and people with longer time budgets, on the other hand, show the greatest propensity to travel long distances and to engage in touring vacations. Koo et al. (2012) also revealed that the type of travelling group is a statistically significant factor for dispersal of destinations. Compared to solo traveler, number of destinations for travelling in "couples", "with family", "friends and relatives", and "business associates" increase.

Heterogeneity in tourist flow of a travel party increases due to the companions' preferences and

demands. For example, some couples with young children regarded the travel as an opportunity to enhance family harmoniousness and education children so they need to consider the attractions in the destination and the transit time between destinations in order to suit children's taste.

> *Considering the children's acceptance of long haul trip, some places in Tohoku Region are excluded in our trip where we wanted to visit at the beginning. And then we added Kamakura as a destination in the itinerary because it is very close to Tokyo and it is the season of Hydrangea macrophylla now. Some museums and libraries are also in our consideration for children's learning knowledge. (ID: 5605064, itinerary: Tokyo-Kakunodate-Hirosaki-Aomori-Towada- Morioka-Tokyo-Kamakura-Tokyo)*

However, the travel companion has limited impact on GIT itineraries, largely because the itineraries are planned ahead by tourism services and different needs of members in a tour group have been considered.

**(4) Previous travel experience**

Previous travel experience has been identified to have a significant relationship with tourist flow (McKercher and Lew, 2004; Lau and McKercher, 2007). Basically, gaining new experiences is the primary motivation for first time visitors. They are more active and explorative, indicated by the fact that they visited more sites during their stay than repeaters. They are also more likely to visit primary destinations than repeat visitors. Thus according to statements of travel services, ordinary itineraries (golden routes, et al.) are recommended to first time GITs while in-depth tours are recommended to repeat GITs. Relaxation and familiarity are the most important reasons for repeat visitors.

Prvious travel experience also imposes influences on FITs' movement patterns as destination familiarity, emotion and experiences varies between first-time visitors and repeaters. Several first-time FITs are interested in exploring widely throughout Japan and have a strong desire to explore well-known and primary destinations. Repeat FITs, on the other hand, presented two different patterns in terms of the destination choice: some people visit new destinations since they need to seek new experiences while some other people visit the same destinations due to their strong desire for repeat visitation or their regret in the previous visitation.

> *Considering this is the first time to travel to Japan and the time is sufficient, I chosen a itinerary throughout from Kanto Region to Kansai Region, with beginning at the famous city*

*Tokyo. (ID: 5546604, itinerary: Tokyo-Osaka-Kyoto-Tokyo-Fujisan- Tokyo)*

*Japan is a place worth going a few times anyway. Since last year I spent a lot of time in Tokyo with the tour group, I decided to go to Kansai to make up for last year's regret. (ID: 5505230, itinerary: Osaka-Kyoto-Nara-Osaka)*

**(5) Opinions of others**

Existing literature has suggested that opinions from others are powerful for tourist to make decisions (Huang and Cai, 2011). Previous experiences of others could effectively save time for people who search for information and satisfy the adverse-risk desire when choosing a GIT itinerary to an unfamiliar destination. Meanwhile, opinions of others may affect GITs' choice for a specific travel service and the GIT itinerary it is selling.

Several FITs mentioned the importance of opinions from others (relatives, friends, colleagues and online reviews) in destination choice process. Some actually choose their destination based on recommendations from their trusted inner circle. For example, some elderly people traveling to Japan for the first time believes even depend on their children's opinions. In addition, the online review or diaries which provide detailed information about the destination in terms of transportation, tourist attractions, accommodation and cost, have been essential to Chinese tourists in the travel-planning process. Especially the research sample in this study are all come from the online travel diaries which means they are willing to acquire information from online reviews before travel and share their experiences of travel afterwards.

*After reading a lot of travel diaries in Ctrip website, I found that the people who had traveled to Japan generally have commented favorably on this country, and there seems some destinations worth visiting (Forgive me for the cognition about Japan before). With curiosity and expectation, I discussed with my father and grandma to decide on the destinations of Japan. (ID: 3250409, itinerary:Tokyo-Osaka)*

### 6.1.3 Destination characteristics

**(1) Destination resource**

Destination resources include attractions of natural assets, tangible or intangible cultural heritage, theme parks, shopping area, even the local market, etc. Different demands need different destinations. Conversely, the attractions within a destination can play a major role in effecting people's intention to visit this destination. Tourism resources can be found as a key factor affecting

distribution of both GIT and FIT flows. The key elements associated with destination resources are found to be the uniqueness, popularity and seasonality.

Most of the tourist flows are concentrated in central Japan mainly because of the location of World Heritage Sites of Japan (10 sites are located in central Japan of total 20), which constitute an important part of tourism attractions. In addition, the biggest cities such as Tokyo, Osaka, Nagoya, etc, are also concentrated in central Japan, which provide urban landscape, services and facilities (especially the popular theme parks and shopping malls/outlets for Chinese tourists). For example, the Disney Land and Tokyo Sky Tree in Tokyo, the Universal Studios and Shinsaibashi (shopping area) in Osaka are mentioned by tourists mostly.

> *We chose Himeji and Okayama as our destination. Without doubt Himeji is known for Himeji Castle, which is one of the three famous Castles of Japan. As for Okayama, the Korakuen Garden is one of the famous gardens representing the Edo Period. It was built in 1700 and has a history of more than 300 years. Nowadays, Korakuen, with Kenrokuen in Kanazawa, and Kairakuen in Mito are called three most famous gardens in Japan. (ID: 3131260, itinerary: Osaka-Himeji-Okayama-Hiroshima-Osaka-Kyoto-Osaka)*

Another characteristic mentioned by tourist is that the destination attraction not only depends on resource itself but depend on the resource comparative advantage. When the resource combined with other aspects such as price and distance are considered by the tourists, that whether the destination have a comparative advantage impacts tourists' decision making.

> *The original plan was visiting Kyoto, Osaka, Kobe and Nara. Afterwards when we booked the hot spring hotel we excluded Arima hot spring in Kobe and chose the Shirahama which is surrounded by the beautiful Pacific Ocean. And this became the most surprising and pleasant part of our journey. (ID: 5519481, itinerary: Tokyo- Kanazawa-Kyoto-Shirakawa-Nara-Osaka)*

In general, the destination resources constitute the foundation of tourist products. It has been remarked that a set of cultural, natural and recreational endowments are crucial determinants of tourism flows (Marrocu and Paci, 2013). Tourists' evaluation is strongly connected to the features of an overall integrated tourist product, like information and tourist services, cultural and natural resources, tourist safety (Cracolici and Nijkamp, 2009). Therefore, the diverse features of the tourism resources play a key role in determining the flows of different tourists to different

destinations.

However, there are differences between GIT and FIT. Itineraries of GITs are usually arranged by travel services so the tourist flows are concentrated in popular destination with traditional tourism resources. FITs like to customize their travel itineraries and seek different resources. For example, Setouchi art exhibition is a very key element to attract Chinese FITs visiting Takamatsu, Naoshima and Shodoshima.

In addition, destination resource characteristics (including the hierarchy of tourism resources, touring reputation) have basic effect on tourist flow network. The higher hierarchy a destination has the more likely it become a center in the tourist flow network. As preceding paragraphs stated, both Fujisan and Kyoto own world class tourism resources, making them easier to become centers.

**(2) Distribution of destinations**

The spatial patterns of tourist flow are not only influenced by the tourists themselves but also by the distribution of tourism destinations. The geographical proximity and configuration of destinations/attractions within the travel network is a constraint factor for both GIT and FIT flows.

Usually, scattered destinations cause a spatially expansive behavior. The primary or gateway destinations, generally owning most famous attractions and activities, have the greatest ability to pull tourists, whereas tertiary destinations have a relatively lower pulling effect. Thus, tourist movement patterns will be affected by the distribution of destination based on the pulling effect of different attractions (Lau and McKercher, 2007). In addition, spatial distribution patterns of destinations may result in similar patterns of tourist distribution. For instance, a “node” will draw a concentration of activities, whereas a linear pattern of attractions will yield linear movement of tourists (Weaver, 2006).

In this study, it can be found that because airplane is the main mode of transportation for tourists to Japan, limited major cities with international airport become the first/gateway destination for tourist. The distance of other destinations to first/gateway destinations are cited as a further influencing factor in destination choice and itinerary patterns. For example, some FITs take a base camp pattern when they visit Kansai Region. Osaka is regarded as a base from which visiting surrounding cities such as Kyoto, Nara and Kobe just because they are all in one hour driving distance.

Furthermore, itinerary patterns have an effect on tourist flow network. Sub-region 1 has the

lowest density probably because the travel itineraries in this region are mainly linear (such as the golden route: Tokyo –Fujisan –Nagoya –Kyoto -Osaka) rather than loop or complex pattern. On the other hand, the base camp travel pattern is more adopted in Hokkaido region which make the tourist flow network shows a single center structure (tourists usually take Sapporo as a primary destination and "base camp" from which visit other destinations).

*There is only one hour's drive distance from Osaka to Nara Park. So we can stay in Osaka, planning a day trip to Nara and return to Osaka at night. After all, Osaka is more prosperous than Nara. (ID: 5509045, itinerary: Osaka-Nara-Osaka- Kobe-Osaka-Kyoto-Tokyo)*

### 6.1.4 Transportation characteristics

**(1) Transportation expense**

Transportation expenses are a large part of tourists' budget when traveling, which consist of two parts: the transportation cost between China and Japan (usually the air ticket price) and the transport expenditure on railway, bus, taxi, subway, etc. within Japan. It has limited influence on GIT itineraries because it is brought into the cost benefit consideration by travel services but it exerts important impacts on FITs' choices.

Several FITs considered that the price of air ticket can lead to their choice for the gateway and egress destination. In this study, it is found that low cost airline routes between China and Japan stimulated Chinese traveling to some lesser know destinations such as Takamatsu, Saga and Asahikawa. Within Japan, the Japan Rail PASS is mentioned by many tourists as a cost effective way to travel between different destinations. A JR Pass offers unlimited, nationwide travel on almost all trains operated by Japan Railways, including most Shinkansen (bullet trains) for a certain period of time. Therefore tourists can often get to many destinations for free by train with this pass, which enrich the complexity of tourist flow patterns.

*Casually I found the price of round-trip ticket from Shanghai to Okayama only needs 499 RMB so I decided to go to Okayama. (ID: 5498714, itinerary: Okayama-Himeji-Kobe-Kinosaki-Osaka- Kurashiki-Okayama)*

*The trip was 9 days and a round trip to and back from Osaka. A reasonable itinerary maybe starts at Tokyo and end in Osaka, but I chose round trip flights to Osaka due to cheap ticket. (ID: 3104491, itinerary: Osaka-Tokyo-Kamakura-Kyoto- Nara-Osaka)*

**(2) Transportation network**

Samely, the transportation network has limited influence on GIT itineraries because the transportation way is usually the tour bus arranged by travel services.

However, this theme obtained from the data revealed the convenience and complexity of the local transportation network have a role in FITs' choice for gateway destination and itinerary. Convenience means the extent that tourist can reach the destination easily and a destination has good market access or not. Some tourists felt that whether a city has direct flights to China determines whether they take it as the main destination. Within Japan, considering the self drive mode is very few since Chinese drive license is not admitted in Japan, connections and transfers of various modes of public transportation are very important to FITs. The impact of complexity of transportation network within a destination is also mentioned by FITs. An advantage of the transportation network in Japan is that most of the place names are Chinese characters.

Transportation network has a profound effect on whole tourist flow network. For example, although Hiroshima is the largest city in Chugoku region and owns Hiroshima international airport, it cannot become a single center for Chinese tourists probably because it lacks enough direct airline routes connecting China. Contrary, Beppu, as a mediator between Kyushu region and Kinki region, shows its high betweenness centrality as an important node.

*There was no direct flight from Shanghai to Sendai, which made me hesitate whether I need to go to Sendai. Finally I decided transfer at Tokyo and take the Shinkansen to Sendai. (ID: 5505088, itinerary: Tokyo-Sendai- Matsushima-Sendai- Morioka-Sendai-Tokyo)*

*The plane landed at Central Japan International Airport, and there is no railway track to the city Takayama, so I needed to take Meitetsu train (take about 40 minutes) to Nagoya city and then took bus there to Takayama. (ID: 6510515, itinerary: Nagoya-Takayama-Shirakawa-Hida-Kanazawa- Nagoya)*

*Compared with the traffic network in Tokyo, Osaka's traffic network is considerable simple. I must admit that the destination for my first trip to Japan was Osaka (Kansai) rather than Tokyo because I was really puzzled about its traffic system. (ID: 6355484, itinerary: Osaka-Nara-Osaka-Kyoto-Osaka)*

### 6.1.5 Macro environment

#### (1) Visa policy

According to the policy of Ministry of Foreign Affairs of Japan, there are two types of visas for

Chinese FITs in 2018: single-entry and multiple-entry. Both have certain requirements such as sufficient level of financial capability. The period of stay allowed under single-entry visa category is either 15 days or 30 days which restrict the time of Chinese tourists' length of stay. Multiple-entry individual tourist visas may be issued to those travelers who stay at least one night in either Okinawa Prefecture or any prefecture in Tohoku Region (Aomori, Iwate, Miyagi, Akita, Yamagata, and Fukushima) which promote the cities in Tohoku Region as the tourists' choice. Some FITs expressed that the visa policy is an obstacle for them to Japan while others who have own the multiple entry visa said they travel to Japan again because they do not want to waste the visa. In addition, someone travel to destinations in Tohoku Region just for the multiple-entry visas.

*The main purpose is to acquire a three years multiple-entry visa so I made a four days three nights tour of Tokyo-Sendai. (ID: 3174870, itinerary: Tokyo-Sendai-Tokyo)*

*Since I got the five years multiple-entry visa in the beginning of year, going to Japan is a trip as soon as I want at any time. (ID: 3185786, itinerary: Okayama-Kurashiki-Hiroshima-Okayama)*

In this study, it can be found the visa policy affects the FITs' choice for specific destinations especially for Tohoku region. In addition, relaxation of visa requirements for Chinese GITs not only caused significant increase of mainland Chinese travelling to Japan, but also prompted their behavior pattern changes from a longitudinal perspective. For example, although golden route is still the popular route for tourist, more and more new itineraries emerged.

**(2) Political relationship**

Apart from factors as the preceding discussion highlights, the diplomatic relations and political issues construct the background for bilateral tourist flow between countries. Especially, China-Japanese relations have a long history and experienced dramatic changes. It influences not only the volume of Chinese tourist flow in Japan, but also the shortening of travel to Japan due to the visa policy. For example, the 2012 dispute over the Diaoyu/Senkaku Islands caused Chinese travel to Japan fell almost 40% because travel services cancelled the majority of GIT itineraries. The positive growth did not recover until the latter half of 2013 when the diplomatic tensions subsided which demonstrated that government-to-government relations play a key role in providing the "space" for tourism to operate (Kim et al., 2016).

Some FITs also stated that the diplomatic as well as historical issues affected their desire for travelling to Japan. However, it has a relatively small influence because they may start the travel due to other factors such as the recommendations from friends or arrangement by companies. Nevertheless, when the diplomatic issue dominates the demand for travel, it affects the tourists' intentions and generates obstacles for travel business.

> *Traveling to Japan is really not my original intention, especially the relations between China and Japan in the last few years are not good…however, I decided to visit Japan as a tourist and wanted to find the present situations of Japan now. (ID: 3116473, itinerary: Tokyo-Hakone-Nagoya-Kyoto-Osaka)*

**6.1.6 Unforeseen circumstance**

Both the GIT and FIT itineraries are usually fixed before traveling because hotels and airline tickets have to be booked in advance, but some unforeseen issues such as weather conditions or fortuitous events are always cause tourists to rescheduling their itineraries. Especially, Japan is a country with the high natural disaster risk. Torrential rain, earthquakes and typhoons can cause damage to transportation systems and thus hinder the travel of tourists.

Weather conditions can impact on tourists through transportation delays, cancellations and accidents. If the day-to-day weather variation is not too extreme, little effect on overall visitor are noted other than a small switch from outdoor to indoor activities (McKercher et al., 2015). In GIT itineraries, tourists' options of dealing with bad weather are limited because they are arranged by travel services. Tourist still have to continue with trips but shortening stays, changing, cancelling or postponing planned visiting to some destinations, or simply enduring with the conditions encountered. In contrast, there are more choices for FITs dealing with the bad weathers since they can arrange itineraries themselves.

In addition, although very infrequent, some other fortuitous events such as the flight delay are also mentioned by FITs due to its impact for first day's activities.

> *I was planning to go to Matsushima and outlet in the next day. Unfortunately, Typhoon made landfall on Tohoku Region causing Shinkansen canceling and reducing train runs. Thus I can only stay in Sendai for shopping. (ID: 5653118, itinerary: Tokyo-Yokohama-Nikko-Sendai-Hakodate- Tokyo)*

> *Nagasaki had been raining, so we once again changed the plan temporarily. We went to*

*Hakata (Fukuoka) by train and took a stroll in Canal City and Tenjin underground shopping center after lunch. (ID: 5487341, itinerary: Fukuoka-Ureshino-Fukuoka-Kitakyushu -Fukuoka)*

### 6.2 A model of factors influencing tourist flows

Through the qualitative analyses, a model of factors influencing tourist flow is developed and shown in Figure 6.1. The results of the factors are categorized into six major sections: cost benefit consideration of travel services, tourist condition, destination characteristic, transportation characteristic, macro environment and unforeseen circumstance. Different factors may impose different impacts on GIT and FIT flows. Thus the Figure 6.1 is divided into two parts: part A reflects the factors influencing GIT flows and the part B reflects the factors influencing FIT flows. The thick solid lines mean the direct and important influence of factors on tourist flow while the thin solid lines mean the direct and comparative limited influence. The dotted lines mean the influence between factors. The arrows indicate the direction of influences. For example, the transportation expense is related to distribution of destination. The more scattered the destinations distribute, the higher transportation expense needed in an itinerary.

Cost benefit consideration is fundamental for GIT flows. Although the factors of tourist condition need to be considered in the planning of GIT itineraries, cost benefit is a determining factor in terms of the sale of GIT itineraries. Tourist condition is a core factor influencing FIT flows which include five aspects found in the qualitative study. The travel purpose, their travel companion or prior travel experiences are mentioned extensively by previous studies and the tourists in this research. These factors that influence the tourist flow at a inter destination level are supported by existing literature in the tourism and geographical research.

Destination and transportation characteristics are fixed basically. Destination characteristics can be viewed as a key factor affecting distribution of both GIT and FIT flows. Destination with high reputation and abundant traditional resources can be the primary destination for both GITs and FITs. The higher hierarchy a destination has the more likely it become a center in the tourist flow network. Transportation characteristics have limited influence on GIT flows because transportation way for GITs is usually the tour bus arranged by travel services and it is brought into the cost benefit consideration. On the other hand, Transportation characteristics have strong

and direct relationships with FIT flows. For example, whether the resources can satisfy the tourist's purpose impacts the tourist's choice for this destination. The transportation network usually relates to the distribution of destinations chosen by tourists and impacts the FITs' time rationing and transportation expenses at the same time.

The factors of macro environment and unforeseen circumstance are usually variable and constitute the background factors influencing tourist flow. Comparatively, macro environment especially the political relationship exerts more influence on GITs because the business activities of travel services can be regulated by the government in China. For FITs, as discussed previously, although tourist's length of stay in Japan is related to the visa policy, and the relationship between China and Japan affects the tourist's desire and emotion for Japan to some extent, FITs can make their decision according their free will. In terms of the unforeseen issues, although infrequent, it impels FITs' re-arrangement of the trip and changes the tourist flow characteristics accordingly. Comparatively, it has less influence on GIT flows because tourism services have more resources for addressing unforeseen issues.

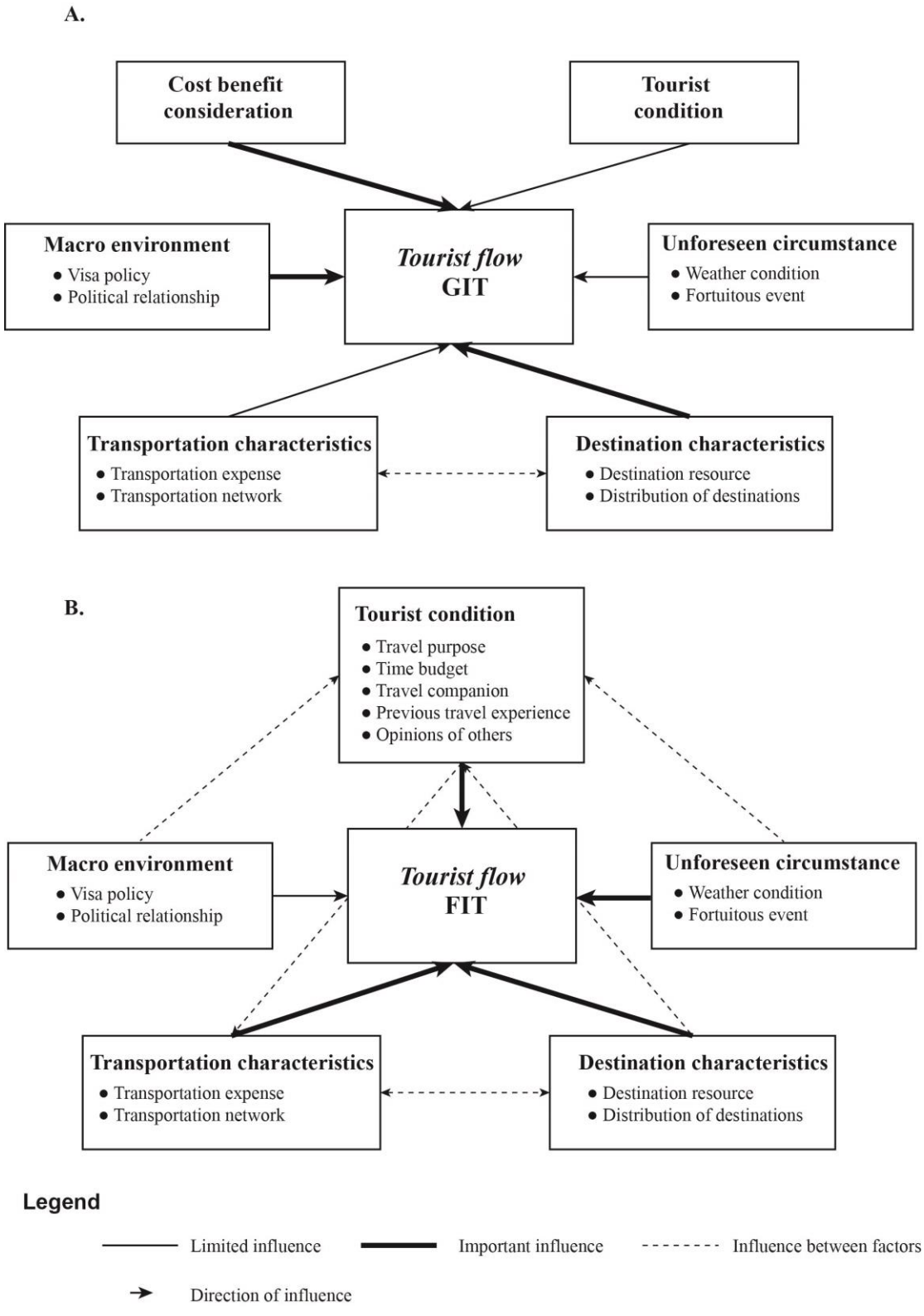



Figure 6.1 A model of factors influencing tourist flow

# VII Conclusion

## 7.1 Theoretical values

The most critical theoretical contribution of this study is applying Social Network Analysis to tourist flow research and summarized spatial patterns of tourist flow from three levels systematically: node, itinerary and network. Through application of node and network indicators of Social Network Analysis, along with multiple methods (Analysis of variance, Chi-square analysis and content analysis), the structural characteristics and factors of tourist flow are identified. The research verified the applicability of Social Network Analysis method and enriched tourist flow research. It also contributes to the literatures by providing insights into multi destination travel patterns.

Moreover, comparative analysis targeting at GIT and FIT flows deepened the understanding for complexity of tourist flow. Although more and more Chinese FITs traveled to Japan, very few studies have looked into their spatial patterns and their differences with GITs. This study identified the differences between GIT and FIT through the analysis of destination distribution, characteristics of itinerary patterns and network pattern.

The specific empirical analysis in this study shows that:

(1) The destinations and Chinese tourist flows are mainly concentrated in the central Japan (including Kanto, Chubu and Kinki Region), then the central Hokkaido region and Northern Kyushu region. In accordance with distribution of destinations, the distribution of Chinese tourist flows is also disequilibrium, characterized by an extensive dispersion with localized concentrations from an overall perspective.

Compared to GITs, spatial distribution of FIT flows is more extensive, FITs visit more regions including Tohoku region, Chugoku region and Shikoku region and have more inter regional movements. It is due to that FIT itineraries (including the destinations, accommodation and transportation, etc.) are dominated by tourists themselves to a great extent.

(2) Itinerary patterns of tourist flows can be divided into single destination pattern (S1) and multiple destination patterns which include round trip (M1), base camp (M2), regional loop (M3), trip chain (M4) and complex pattern (M5). The complex pattern has the largest number of visited destinations, longest length of stay and highest expense.

Comparatively, FIT itineraries own more round trip, base camp and complex pattern but less

single destination pattern, regional loop and trip chain pattern. FITs visit smaller number of destinations but they take longer time in travel and spend more money, which means that the FITs prefer slow-paced, in-depth tours rather than mere sightseeing tours.

(3) Destinations are classified into five types: core node, secondary core node, important node, common node and attached node. Destinations with higher hierarchy have higher centrality value and are more likely to have comprehensive functions while destinations with lower hierarchy own single function. The nodes Tokyo, Kyoto, Osaka are the most important destinations for both the GITs and FITs.

Most nodes in FIT network have higher degree centrality than the nodes in GIT network. However, the destination Fujisan is not ranked within the most important destinations for FITs. In addition, regional key cities and the cities with small international airports are more important to FITs. On the one hand, FITs seek more new destinations so there has a wider scope for FIT flow network and more connections among destinations in this network. On the other hand, FITs rely heavily on public transportation so they need to consider the cost and the convenience. Therefore, the destinations with airport are more utilized by FIT.

(4) Empirical results indicate that 232 nodes and 977 ties constitute the Chinese tourist flow network and the pattern of this network is complex. there may be six theoretical types of network pattern at inter destinations level: multi center agglomeration structure, multi center dispersion structure, multi center equilibrium structure, single center equilibrium structure, single center dispersion structure and single center agglomeration structure, and four of them have been found in Chinese tourist flow network. Overall the network can be divided into five sub regions with different patterns, which are affected by destination characteristics, transportation network and itinerary patterns. Tourist flows with different intensity present hierarchical characteristic for both GIT and FIT network.

FIT network has larger size, longer diameter and lower density, showing a looser structure compared to GIT network. GIT network has higher degree centralization of the compared to FIT network showing that GITs appear to visit and combine a smaller number of destinations. However, the FIT network shows a higher betweenness centralization which means FITs are more dependent on some hubs. It is probably because of the different transportation way for FITs and GITs. FIT network comprises five sub regions while GIT network comprises three. In sub region

Tohoku and Chugoku-Shikoku Region, only FIT networks exist. Connections between sub regions within FIT network are stronger than GIT network.

(5) Factors influencing tourist flow can be categorized into six major sections: cost benefit consideration of travel services, tourist condition, destination characteristic, transportation characteristic, macro environment and unforeseen circumstance. Destination and transportation characteristics are fixed basically. The factors of macro environment and unforeseen circumstance are usually variable and constitute the background factors influencing tourist flow.

Cost benefit consideration is fundamental for GIT flows while tourist condition is a core factor influencing FIT flows. Other factors impact both GIT and FIT flows. Transportation characteristics exert more influence on FITs than GITs. Macro environment especially the political relationship exerts more influence on GITs because the business activities of travel services can be regulated by the government in China.

### 7.2 Practical implications

As a practical implication, the recognition of structural characteristic and patterns of Chinese tourist flow can be useful for planning tourism facilities in Japan and defining marketing strategies.

Firstly, Tourist flows are concentrated in the major destinations such as Tokyo, Fujisan, Kyoto and Osaka currently, suggesting a significant opportunity for locations outside of top destination areas to attract more tourists. Especially, since demand simulations for 2020 indicate that the country may face up to a 50 percent shortage in accommodation in Tokyo/Kyoto/Osaka, and up to 30 percent overflow in air capacity for Haneda and Narita airports (Andonian et al., 2016), the development for accommodations and infrastructure in local destinations (especially the common nodes and attached nodes in this study) is more necessary.

Secondly, there are very few GIT flows distributed in Tohoku, Chugoku and Shikoku Region, suggesting that more promoting campaigns about these regions should be conducted targeting at the tourists and travel industry in China. This is also in accordance with the development strategies of Japan’s inbound tourism in future.

Thirdly, considering the growth trend of FITs to Japan and high betweenness centralization of FIT network, it is necessary to promote the convenience of transportation between destinations

within sub regions and reduce the language barrier for FITs. For example, enhancing the connections between Takamatsu and other destinations in Shikoku Region may help to strength tourism development of this region.

Additionally, it is necessary to strengthen the direct linkage between the sub regions and China due to the weak connections among sub regions. For instance, since China Eastern Airlines introduced its flights from Shanghai Pudong to Asahikawa in 2014, Chinese travel to East Hokkaido increased. The direct airlines between Takamatsu and Shanghai promoted the Chinese travel to Shikoku and Chugoku Region to some extent.

## Acknowledgements

First and foremost I would like to express my appreciation to my supervisor, Professor Kureha Masaaki. Thank you for believing in me and offering me the opportunity to pursue this PhD. Thank you for guiding me these years.

I would also like to thank the members of my thesis committee, Professor Murayama Yuji, Professor Tsutsumi Jun and Dr. Yamashita Akio. Thank you for careful and thorough reading of this dissertation and for the thoughtful comments and constructive suggestions.

Finally, a special thanks to my family, especially to my beloved wife, Dr. He Yinchun for your constant support and encouragement throughout my study. Moreover, I would love to thank my little son, Zeng Boyan. I am grateful every day that you came into our world.

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