A Study on the Characteristics of the Seasonal Travel Path of Individual Chinese Travellers in Korea

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중국 개인 여행객의 계절별 한국 여행경로 특성분석

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Abstract In this study, we collected data through online travel notes from January to December 2018 and analyzed the seasonal travel characteristics of individual visiting Chinese by utilizing social network analysis. The analysis showed that Seoul is a hub for Chinese travel to Korea and the main destinations for individual visiting Chinese are concentrated in Seoul, Busan, Jeju Island, Gyeongju and Gangneung, with wide differences in seasons. The research results can be used as basic data for the development of tourism courses for individual Chinese tourists to Korea, provision of tourism services and optimization of tourism facility layout. Future research can consider continuing to use network travel notes to study the tourist destination and the mode of transportation between tourist nodes, which can provide reference for the development of tourist market and the planning and design of tourist traffic.

Key Words : Social Network Analysis, Chinese Travel to Korea, Travel Path, Seasonal Characteristics, Online Travel Note

요 약 2016년 한국에 미군의 사드 미사일이 배치된 이후 중국으로부터 단체관광은 전면 중단되었다. 이후 중국인의 한국 관광은 개인 중심의 여행일정으로 이루어지고 있다. 본 연구에서는 2018년 1월부터 12월 까지 온라인 여행노트를 통해 데이터를 수집하고, 소셜 네트워크 분석을 활용하여 개별방문 중국인의 계절별 한국관광 여정 특성을 분석하였다. 분석 결과 서울은 중국인의 한국여행 허브이며 개별 방문 중국인의 주요 방문지는 서울, 부산, 제주도, 경주 및 강릉에 집중되어 있고 계절에 따라 큰 차이가 있는 것으로 나타났다. 연구 결과는 개별 중국인의 한국 관광을 위한 관광코스의 개발, 관광 서비스 제공 및 관광 시설배치의 최적화를 위한 기초자료로 활용될 수 있다. 향후 연구는 여행 방문지와 관광명소 사이의 이동 교통방식을 연구하여 관광 일정 계획 설계에 참고를 제공할 수 있다.

주제어 : 소셜 네트워크 분석, 중국인의 한국여행, 관광 여정, 계절 특성, 온라인 여행노트

1. Introduction

Due to geographical location, Korean wave culture and other reasons, South Korea has become one of the most popular outbound tourism destinations for Chinese. Since the

establishment of diplomatic relations between China and South Korea in 1992, trade and cultural exchanges between the two countries have been growing rapidly and steadily, with tourism exchanges being the most prominent. Shown in Fig. 1. According to the statistics of the Korean National Tourism Organization, the number of Chinese tourists to South Korea showed an overall growth trend from 2009 to 2018, especially from 2011 to 2014, with a rapid growth rate and scale. In 2013, China overtook Japan as South Korea's biggest source of tourists. More than 8 million Chinese visited South Korea in 2016, accounting for 46.8% of the total number of inbound tourists (Korean National Tourism Organization, 2016). Affected by the Thaad Incident, on March 3rd, 2017, the China National Tourism Administration issued to "Travel Tips to South Korea". Although no formal official documents, the main online travel agents in China, such as Ctrip, tuniu.com, LY.com and other OTA, withdrew their South Korean tourism products one after another.
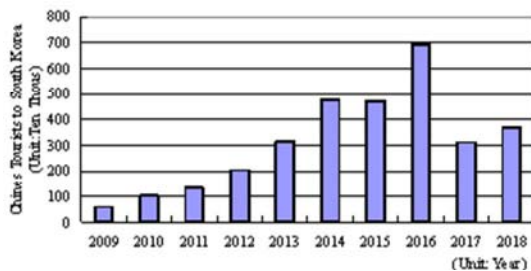

Fig. 1. Number of Chinese tourists to South Korea from 2009 to 2018

Notes: these data were collected from the tourism statistics of Korean National Tourism Organization.
http://kto.visitkorea.or.kr/kor/notice/data/statis/profit/notice/inout/popup.kto, 2019−5−1.

The number of Chinese tourists traveling to South Korea in form of tourist groups has dropped sharply, and independent tourism has become the main form of Chinese tourism to South Korea. With the improvement of Sino−Korean relations, the number of Chinese tourists to South Korea rebounded in 2018.

Shown in Fig. 1. but Chinese tourists to South Korea are still mainly individual travellers. As far as the current situation is concerned, it is of great practical significance to study the trajectory of China's individual travellers in South Korea for the current development of independent tourism market in South Korea and the organization of group tourism routes in the future.

2. Theoretical Background

2.1 Domestic and Foreign Research of Tourism Flow

Domestic and foreign scholars have paid much attention to the complex, multi−level and wide−ranging issues related to tourism flow. From the perspective of research content, they mainly focus on the spatio−temporal structure characteristics of tourism flow[1], spatio−temporal evolution characteristics[2], driving mechanism and influencing factors[3,4] and flow effect analysis[5]. In term of research scale, it mainly focuses on large−scale inbound tourism flows research[6] and meso−scale inter−city tourism flows research[7]. In recent years, some scholars have paid more attention to the study of micro−scale internal tourism flows research[8]. In term of research methods, metrological and statistical methods, GIS analysis, GPS tools[9], social network analysis methods are widely used.

2.2 Research on Tourism Flow Using Social Network Analysis Method

Social Network Theory, which originated in the 1930s and matured in the 1970s, is a new paradigm of sociological research. Social network is not only a technical method, but also a set of theoretical methods[10]. Centrality is one of the key points in social network analysis[11]. It is a quantitative expression of the power or centrality of actors, which can be explained by

the concept of "influence". As a study methodology, the Social network analysis is a new paradigm as well as a complement of statistical analysis[12]. Social network theory has a strong explanatory power on many tourism issues and many scholars use social network analysis method to analyze issues related to tourism flows[13,14]. In general, the research on tourism flow mainly focuses on inbound tourism, and the study of outbound tourism flow is less.

3. Data collection and research methods

3.1 Data sources

Online travel notes are "Unobtrusive and Available Data" with geospatial information, emotional information and evaluation information, featuring objective, large quantity and convenient access[15]. The online travel notes data used in this study were all from www.mafengwo.cn, which is a Chinese tourism social networking website with the core of "UGC+ Big Data+ Independent Travel Service Platform". Because the spatial structure characteristics of tourism flow network have obvious quarterly and monthly changes, and the structure characteristics of tourism flow network have relatively stable annual changes, this study takes a natural year as the research interval. According to the complete records of the whole trips from arrival to departure, the online travel notes were screened, and 511 online travel notes of China's individual travellers to South Korea from January 2018 to December 2018.In this study, 511 textual information were firstly converted into information that could be quantitatively studied: according to the order of visits, the actual daily trips of tourists were edited into tourist nodes, such as Seoul-Busan-Jeju Island, and stored in Excel. A total of 1262 tourist nodes were collected.

3.2 Research methods

Social network analysis is used to analyze the structural characteristics of China's independent tourism flow network to South Korea. Centrality is selected as the evaluation index of node structure of Independent tourism flow network from China to South Korea. Centrality is a quantitative analysis of individual indicators, which is used to describe the node importance degree of indicators, including degree centrality, closeness centrality, betweenness centrality and eigenvector centrality, etc. This study mainly reflects the structural characteristics of nodes through degree centrality and betweenness centrality.

4. Analysis on the structure of tourism flow network

By constructing the network structure chart of China's individual traveller flows South Korea, the key tourism nodes are identified and the seasonal network structure chart is constructed. The spatio-temporal characteristics of China's independent tourism flows to South Korea are observed, and the characteristics of main nodes are further summarized by analyzing the structural characteristics of nodes.

4.1 Construction of Tourism Flows Network

The travel nodes data stored in Excel was converted into. TXT text files, which was imported into the software of KHCoder3 to construct the structure map of China's independent tourism flows to South Korea The 27 nodes in the Fig. 2 represent the main destinations of China's individual travellers to South Korea. Among them, the larger the circular area of the node is, the greater the sum of inflow degree and outflow degree of the representative node is, i.e., the greater the number of visitors is.

The closer the connection between the nodes, the more connections between the representative nodes, namely, the more frequent the travel path. As shown in Fig. 2, there are three main nodes with large circular area and close connection: Seoul, Busan and Jeju Island, which constitute the main part of China's independent tourism flows network to South Korea and are the focus of tourists' attention and visit.
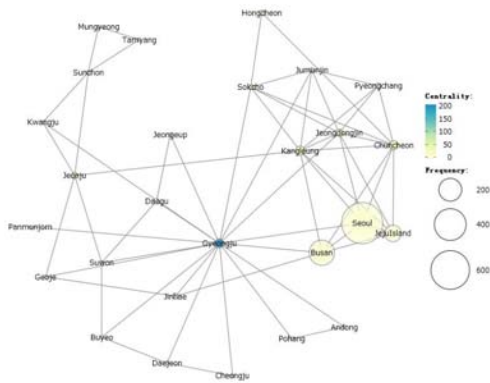

Fig. 2. Network structure of China's individual traveller flows to South Korea in 2018

The more the number of shortest paths passing through a node, the higher the betweenness centrality representing the node, that is, the more times tourists transfer in this node. Gyeongju is a node with high betweenness centrality, which is easy for China's individual travellers to pass through during their travel to South Korea. It is an important intermediary point connecting the northern and southern parts of South Korea. In addition, there is a close connection between Kangleung, Jeongdongjin, Chuncheon, Pyeongchang, Jumunjin and Sokcho, and travel path frequently between them. From the perspective of seasonal difference of travel path, it is found that through the extraction and analysis of travel time information recorded in the travel notes that the seasonal variation of Chinese individual travellers to South Korea changes significantly, and the tourism flows mainly concentrates in February, April,

September and October. Shown in Fig. 3. The change in tourism flow is in line with China's holiday schedule, with Chinese Lunar New Year in February (7 days of paid vacation), Tomb Sweeping Festival in April (3 days of paid vacation), Mid-Autumn Festival in September (3 days of paid vacation) and National Day in October (7 days of paid vacation). Adequate leisure time is one of the important conditions for Chinese tourists to choose to travel to South Korea.

Fig. 3. Tourism flows temporal distribution of China's individual travellers to South Korea

According to the seasonal changes of China's independent tourism flows to South Korea, the spring (from March to May) network has the most connected nodes, and the main nodes are the closest distance to each other, indicating that the spring tourism flow network has the high density, the most paths and the closest connection between the main nodes. Shown in Fig. 4, Fig. 5, Fig. 6, Fig. 7.

The number of nodes in other seasons is less than that in spring, and the connection between nodes is far, especially in winter in Fig. 7, which indicates that the density of tourism flow network in summer, autumn and winter is lower than that in spring, and the connection between nodes is not as close as that in spring. Further observation shows that although seasonality is obvious, the nodes that tourists mainly visit have not changed greatly. Seoul, Busan and Jeju Island are still the nodes that tourists often visit, followed by Gyeongju in spring and summer. Shown in Fig. 4 and Fig. 5. Kangleung and

Fig. 4. Network structure of China's independent tourism flows to South Korea in Spring (from Mar. 1st to May 31st, 2018)

Fig. 5. Network structure of China's independent tourism flows to South Korea in Summer (from Jun. 1st to Aug. 31st, 2018)

Fig. 6. Network structure of China's independent tourism flows to South Korea in Autumn (from Sep. 1st to Nov. 30th, 2018)

Fig. 7. Network structure of China's independent tourism flows to South Korea in Winter (from Dec. 1st to Feb. 28th, 2018)

Chuncheon in autumn and winter. Shown in Fig. 6 and Fig. 7.

4.2 Nodes structure characteristics of tourism flows network

In order to fully and clearly reflect the network characteristics, KHCoder3 and R.version3.4.4 software is used to Analyse the data. In this study, the key words of tourist destinations in travel notes were analyzed. Considering the characteristics of the analytic objects, degree centrality and betweenness centrality were used to analyze.

4.2.1 Degree Centrality

Degree centrality is the most direct measure to describe node centrality in network analysis. It is a measure to measure the number of nodes which connected with other nodes in the network, and also an indicator to measure the number of nodes directly connected with specific nodes. If there are many connections between a particular node and other nodes, it will be considered that the degree centrality is very high, and it plays a core and central role in the network. Degree centrality reflects the ability of a tourism node to gather and radiate with other

Table 1. Degree centrality of tourism nodes (by four seasons)

Spring			Summer			Autumn			Winter		
Tourism Nodes	Deg.	Bet.	Tourism Nodes	Deg.	Bet.	Tourism Nodes	Deg.	Bet.	Tourism Nodes	Deg.	Bet.
Seoul	13	62	Seoul	11	37	Seoul	10	31	Seoul	11	15
Busan	11	11	Busan	9	8	Busan	8	5	Busan	11	7
Gyeongju	7	7	Gyeongju	7	6	JejuIsland	6	4	JejuIsland	9	6
Sunchon	6	5	JejuIsland	5	3	Kangleung	6	2	Kangleung	9	4
Jeongdongjin	5	0	Suwon	5	1.625	Jeongdongjin	6	2	Chuncheon	7	4
Kwangju	5	0	Kangleung	4	1.125	Chuncheon	5	1	Gyeongju	6	3
Jinhae	4	0	Jeongdongjin	4	1.125	Gyeongju	5	0	Jeongdongjin	6	2
Jumunjin	4	0	Daegu	4	1.125	Cheongju	3	0	Sokcho	6	1
Mungyeong	4	0	Buyeo	4	0	Jeongeup	3	0	Jeonju	5	0
Tamyang	4	0	Chuncheon	4	0	Pyeongchang	3	0	Hongcheon	4	0
JejuIsland	3	0	Jeonju	3	0	Jeonju	1	0	Pyeongchang	4	0
Daegu	3	0	Sokcho	2	0				Panmunjom	4	0
Jeonju	3	0									
Kangleung	2	0									
Mean value	5.286	6.071	**Mean value**	5.167	4.917	**Mean value**	5.091	4.091	**Mean value**	6.833	3.5

Notes: Degree Centrality (Deg.), Beteweenness Centrality (Bet.)

tourism nodes.

The greater the degree of a node is, the higher the degree centrality of the node is, and the greater the importance of that node is in the network. The index of degree centrality shows that the network structure of China's independent tourism flow to South Korea presents a strong imbalance. In Table 1, the degree centrality of Seoul and Busan ranked first and second in the four seasons, indicating that they have a strong cohesion and radiation effect on tourism flow, and are the distribution nodes of China's independent tourism flow to South Korea. In addition, in spring and summer, the degree centrality of Gyeongju is second to that of Seoul and Busan, while in autumn and winter, this position is replaced by that of Jeju Island and Kangleung, which indicates that Gyeongju, Jeju Island and Kangleung are potential tourism distribution nodes and show seasonal changes.

4.2.2 Betweenness centrality

Betweenness centrality is an indicator to describe the importance of a node by the number of shortest paths passing through a node, which can grasp the degree of media role of specific nodes among nodes. Betweenness centrality reflects the degree to which tourism nodes control other tourism nodes in relationship of tourism flow. In other words, the node with higher betweenness centrality on the network can be regarded as those that are easier to pass through on the path of tourism flow, that is to say, it has greater influence in the network.

Betweenness centrality indicators in Table 1 show that the betweenness centrality in Seoul is far greater than the average in the whole year. Besides Seoul, the nodes with greater betweenness centrality than mean value are Jinhae and Busan in spring, Busan and Jeongdongjin in summer, Gyeongju in autumn, and Busan, Chuncheon, Jeju Island and Kangleung in winter. These nodes have strong control over other nodes in different seasons and are the key nodes in the network.

5. Conclusions and discussions

This paper takes China's individual travellers to South Korea as the research object. By mining

the data of online travel notes, it constructs the structure map of tourism flow network, analyses the characteristics of network nodes, and draws some useful conclusions:

First, from a spatial point of view, Seoul, Busan, Jeju Island and other nodes constitute the main body of China's independent tourism flow network to South Korea, which is the focus of tourists. This is consistent with the design of group tour routes before the Thaad incident. According to the South Korean tour routes of the website of China International Travel Service CO., Ltd., the main tourist destinations of group tour products in South Korea are Seoul, Jeju Island, "Seoul+Jeju Island" and "Japan+South Korea (Seoul+ Tokyo)". However, the former group tour routes did not include independent tourism hotspots such as Gyeongju and Kangleung. In the future, the travel agency routes design for Chinese group tourists can consider adding these hotspots of independent tour to enrich the tourism content.

Secondly, from the time point of view, the tourism flow of individual travellers from China to South Korea is mainly concentrated in autumn (in September and October). Although Seoul, Busan and other nodes are also the focus of individual travellers in other seasons, their tourism flow reaches its peak in autumn. This is mainly due to the fact that China's National Day holiday (7 days) at the end of September and the beginning of October each year provides enough leisure time for Chinese tourists to realize long distance tour. Studying the rules of holiday system in China is beneficial to the precise marketing of tourism operators in the Chinese market and to the rational arrangement of personnel by tourism organizations.

Thirdly, in terms of node structure characteristics, the fluency degree of transfer and diffusion of independent tourism flow network from China to South Korea is obviously different. In different seasons, the degree centrality and betweenness centrality of tourism nodes are also different. More tourism nodes need to be connected through the two nodes of Seoul and Busan. The degree centrality and betweenness centrality of Seoul are the greatest, indicating that Seoul has a strong cohesion and radiation effect and is the distribution center of China's independent tourism flow to South Korea. Besides Seoul, some nodes show strong control over other nodes in different seasons and are key nodes in the network, such as Jinhae and Busan in spring, Debusan and Jeongdongjin in summer, Gyeongju in autumn, Busan, Chuncheon, Jeju Island and Kangleung in winter. The confirmation of key nodes and major tourist destinations provides scientific basis for the development of regional tourism routes and space, especially for the design of tourist routes and the spatial layout of tourist service facilities.

Different from the previous data sources based on questionnaires survey, this study obtains research data from online travel notes, which is more objective and reliable. The study explores the network structure characteristics of independent tourism flow from China to South Korea, so as to grasp its characteristics in more comprehensively, and has a certain guiding role in tourism planning, especially for the design of tourism routes and the planning of tourism information services. Due to the lack of tourists' demographic data in online travel notes, it is impossible to make analysis according to ages, occupations and gender. However, this study once again verifies the research value of online data from online travel notes. How to make better use of online travel notes is worthy of further discussion in the aspects of tourists' spatial behavior pattern, travel experience and service evaluation.
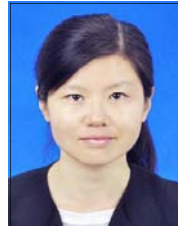
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