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# Exploring the Spatial Structure of a Destination Zone Based on Travel Nodes

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**KEYWORDS**

Destination zone, travel node, primary node, secondary node, tertiary node

**A B S T R A C T**

The spatial elements of a destination zone on functional dimension of tourism can be defined to different levels of travel nodes. The hierarchical structure of travel nodes exploring from the dimension of tourist attractiveness in a destination zone can be divided into three ranks, namely primary node, secondary node and tertiary node. Some travel nodes with tourist attractiveness also providing related facilities for tourism services such as accommodations, cuisines are simutaneously with the tourism function of community nodes. This research conducted an tourism analysis of spatial structure of Ping-Shi area located in Taiwan, used questionnaire investigation method of controlled comparison to distinguish the travel nodes and node ranks in this destination zone. Within this destination zone, there are totally eight travel nodes; three travel nodes at the same time served as comminity nodes, among which Shi-Fen one ranked as primary node, Ping-Shi one as secondary node, Ching-Tong one as tertiary node, while five travel nodes without community function of tourism are distinguished. The type of this destination zone is belonging to a multiple-nodes destination zone, also referred to as a part of chained destination zones when connected to neighboring multiple-nodes destination zones.

## Introduction

### Spatial structure of destination zone

In essence, a destination zone is a defined area, which a traveler chooses to visit in his whole itinerary at least one overnight staying in order to experience attractions (Leiper 1990, 1995; Dredge & Moore 1991; Dredge 1999). A traveler may go to various points of attractions and accommodation sites in his itinerary, and these points play important roles on the shaping of spatial structure with regard to the defined areas of destination zones. Butler (2006) pointed out that destination zone for each traveler is different by a variety of factors including of traveler's preferences and needs, is dynamic, evolving and changing over time, and the boundary is tied to travel routes and staying duration. He also emphasized a destination zone is easily accessible with tourist infrastructure and facilities within a densely built environment (2006:3, 70-71). Gunn (1972), MacCannell

(1976) and Leiper (1995) identified that travel nodes are the central element in the spatial structure of destination zone, and might be regard with the attractiveness of attractions that a person visits or intends visiting for tourism. Travel nodes with different extents of intensity for attractiveness may be distinguished to primary nodes, secondary nodes, and tertiary nodes.

Burton (1995) suggested that the world can be divided into four major destination zones: Europe and Mediterranean, North America, the Pacific and the remainder of the world's economic periphery. His destination zone, which is distinguished to core and the periphery sub-zones in the world is a functional region in terms of high tourism activity with wealth of tourist resources. Gunn (1997) defined destination zone as tourism community including of several spatial elements from functional dimension such as the accessibility to destination zone, gateway, attractions complex, and the linkages between community nodes and travel nodes. Among the spatial elements of a destination zone, it is necessary to have one or more community nodes to provide tourism services such as restaurants, post offices, hospitals, lodging areas and communications and to have travel nodes to provide attractions for view sightseeing such as museums, parks, historical sites and other scenic spots.

According to Gunn's definition, the spatial structure of a destination zone is referred to combine of travel nodes and community nodes including a core area, a buffer area and an approaching area, among which the core area is the most important tourism resource such as mountain peaks, while the buffer area is the background to support the core area, and the approaching area is a community providing related facilities including lodging, restaurants, retails and other support services. But in reality, sometimes they are not arranged according to this situation instead of travel nodes and community nodes concentrating in core area. Within a travel node there are one or more attractions that might cluster in a geographical location. Sometimes a travel node only having the tourism function of providing several attractions clustered in a geographical location with no lodging service. It is possible that a travel node at same time is also a community node with lodging service. In general, the more attractiveness of an attraction, the more is the primary factor that determines the staying length of a travel in this destination zone in the traveler's itinerary.

Dredge (1999) extended Gunn's definition (1997) of a destination zone to a more specific definition by proposing that the demarcation of a destination zone is where travelers need to spend at least one night in meeting their requirements for a leisure experience. Dredge further divided destination zones into three types: a single node destination zone, a multiple nodes destination zone and a chained destination zone.

### (1) A single node destination zone

A single node destination zone is only with a node where travelers stay after arrival at a destination zone. During the entire travel, this node provides travelers with all related tourism services and facilities so that travelers do not need to other resort or go to another destination zone. The Club Med stands as one example of this type.

### (2) A multiple nodes destination zone

A multiple nodes destination zone is a destination zone that has more than one

travel nodes that may be further categorized into primary nodes, secondary nodes and tertiary nodes. The multiple nodes destination zone may not always have primary nodes, because the synergy between secondary nodes alone is more than sufficient to attract travelers to come to this region. The Oahu island of Hawaii stands as an example of this type.

### (3) A chained destination zone

Many connected single node destination zones or multiple nodes destination zones form a chained destination zone, where the tourists stay at least one night in zones. A chained destination zone is much larger in spatial scale than a single node destination zone or a multiple nodes destination zone. The Auto Tour in New Zealand and the Castle Tour of The Rhine River in France are examples of this type.

Pearce (1995) and Fagence (1995) indicated that despite the importance of attractions in the destination zone, there are few researchers who have addressed their spatial structure and ranks in detail, and most researchers have preferred to focus upon typologies, classifications, and inventories of attractions. Leiper (1990, 1995) argues that it is more useful to develop an understanding of the function of destination zone than to develop methods to categorize them. Dredge (1999) also categorized travel nodes into primary nodes, secondary nodes and tertiary nodes in accordance with their drawing attractiveness. Primary nodes are those known to the travelers before they travel, and are the most desired travel nodes of their trips. Secondary nodes, the second desired travel nodes of the travelers, are also known to the travelers before they travel here, but they are not the nodes reference to driving force of the trips. Tertiary nodes, with no pushing force to the travelers before they travel, are the nodes that the travelers find accidently when they get there, with attractiveness for the travelers.

**Table.I** Definition and spatial elements of destination zone

| Term | Definition | Spatial scale and spatial element | Reference |
|---|---|---|---|
| Tourist region | Functional<br>The region of tourist activity in the world | Large spatial scale<br>North America, for example<br>Wealth of tourist resources | Burton (1995) |
| Destination zone | Functional<br>tourism community | Local spatial scale<br>attractions complex, community, gateway, linkage. | Gunn (1997) |
| Destination zone | Functional<br>Single node destination zone, Multiple nodes destination zone, Chained destination zone. | Local spatial scale<br>Travel nodes-primary travel node, secondary travel node, tertiary travel node. | Dredge (1999) |
| Destination area | Functional<br>The area with tourist resources, tourist services and government policy. | Local spatial scale<br>Resort city, for example<br>a core with tourist facilities | Butler (2006) |

### The ranks of travel nodes based on functional dimension of tourism

Despite considerable advancements in the development of methodological processes of tourism planning (Getz 1992; Inskeep 1991; Gunn 2002), there is a little of spatial models and theories from which attractions can be ranked. Fagence (1995) stated that the main contributions of previous researchers is in establishing spatial relevance of tourism development such as spatial interaction between attractions, distance decay from origins to destinations, tourist routes, and characteristics of travel nodes. Dredge (1999) indicated that existing models have largely been developed through a fragmented case-study approach and have not yet achieved a sufficiently integrated conceptual basis for a comprehensive understanding of the spatial characteristics of destination zones. The spatial structure of destination zone requires that core elements be spatially demonstrated. Frequently however, there is little or no effort in the form of spatial hierarchy at the level of ranks.

## Materials and methods

Butler (1980) using a basic curve illustrated the waving of tourism cycle and waning popularity of destination zone. Different stages in the evolution cycle are described, along with a range of possible future trends. The development stage refers to a well-known destination zone, shaped in part by heavy advertising in the original places of travelers. Butler (2006) mentioned that as development stage progresses, local involvement and control of development will decline rapidly. Some locally provided facilities will have disappeared, being superseded by larger, more elaborate, and more up-to-date facilities provided by external organizations, particularly for traveler accommodation. Natural and cultural attractions of original attractions will be supplemented by man-made imported facilities. The number of travelers at peak periods will probably equal or exceed the permanent local population. Using Butler's conception of destination zone, it seems to be suitable for describing tourism cycle of this area as development stage because during Ping-Shi Sky Lantern Festival, the number of travelers at peak periods within Ping-Shi destination zone is about 30000, exceeding the 5000 permanent local population.

The service component of community nodes of a destination zone comprises a diverse range of facilities such as accommodation, restaurants, retail stores, and any other services necessary to support travelers. The division between travel node and community node is becoming increasingly blurred such as in the case of specialized accommodation establishments and resort complexes, including B&B and other thematic parks. This research takes Ping-Shi Line as a linkage to enter Ping-Shi destination zone. Ping-Shi Line is located on the upstream mountain area of the northeastern Taiwan, originally built for coal mining with a total length of 17 kilometers and 8 stations along the line-Hou-Tong station, San-Diao-Ling station, Da-Hua station, Shi-Fen station, Wan-Gu station, Ling-Chiao station, Ping-Shi station, and Ching-Tung station. In order to clarify the spatial structure and characteristics of Ping-Shi destination zone in the process of tourism development, the researchers distributed 300 questionnaires from 2011~2012 by convenient random way at the selected well-known, frequented visited accommodations: Lau-a-fzhux, Ming-kong- Ya-she, Tokyo Homestay, Hokkaido Homestay and He-wan Resort by controlled comparison way.

## Results and Discussion

### The attractions within the Ping-Shi destination zone

Based on the 300 questionnaire survey at the eight stations of , Figure 1 and Table Ⅱ show that there are 27 attractions within the Ping-Shi destination zone, and the most popular attractions among which are Cat Village, Shi-Fen Old Street, Ping-Shi Old Street, Ching-Tong Old Street, Shi-Fen Waterfall, Hou-Tong Coal Mine Ecological Park, Taiwan Coal Mine Museum, Ching-Tong Industry Livelihood Hall, Ching-Tong Coal Mine Memorial Park, Xiao-Zi-Shan Hiking Trail, Wu-Fen Hiking Trail and Ci-Mu-Feng Hiking Trail. These attractions refer to the attractiveness of cat-themed culture, nostalgic culture, terrain landscape, mining culture and natural scenery of the Ping-Shi destination zone. Among these 27 attractios, Cat Village is the most popular attraction, accounting for 65%; the 3 old streets are the second popular attractions, accounting for 47%; the third popular attraction is Shi-Fen Waterfall for 20% proportion; the forth popular attraction are museums and parks for 16% proportion; while the fifth popular attractions are the hiking trails only accounting for 5% respectively (Table Ⅲ).

### The travel nodes within the Ping-Shi destination zone

Based on the questionnaire survey, there are only a few accommodations within the Ping-Shi destination zone among which many travelers likely to choose are: Lau-a-fzhux and He-wan Resort in the neighborhood of Shi-Fen Station, Mingtong-Yashe in the neighborhood of Ping-Shi Station, Hokkaidao Homestay and Tokyo Homestay in the neighborhood of Ching-Tong Station. Some travel nodes within the Ping-Shi destination zone are not only with several attractions but also with a few restaurants and other tourism facilities so they have the tourism functions of travel nodes with community services at the same time, while the other travel nodes such as Hou-Tong, San-Diao-Ling, Da-Hua, Wan-Gu, and Ling-Chiao with no accommodation facilities. Therefore, there are 8 travel nodes within the Ping-Shi destination zone including of Shi-Fen, Ping-Shi, Ching-Tong, Hou-Tong, San-Diao-Ling, Da-Hua, Wan-Gu, Ling-Chiao, and only the 3 travel nodes of Shi-Fen, Ping-Shi and Ching-Tong are simultaneously have the tourism function of travel nodes with community services (Figure 2).

In this research the authors focus on the concept of travel nodes are central element in spatial structure of destination zone, and also hightlight that different ranks of travel nodes demonstrate distinguished functions for tourism services; primary nodes with most unique attractiveness provide various facilities for entertainments, accommodations, restaurants and shopping; secondary nodes with less diversity of facilities but also with attractiveness, generally serves as stopping places; tertiary nodes are not necessary to be availble of accommodations or dining facilities , usally only with single attraction to meet traveler's experinces of tourism activity.

Table Ⅳ and Figure 3 show the results of travel nodes wth different ranks of the travelers for each itinerary -higher percentages indicate more frequently as this ranks for the travel nodes by the travelers. Shi-Fen is significantly most frequently as primary nodes (accounting for 49%) than the others travel nodes; Ping-Shi is most frequently as secondary nodes (accounting for 36%); while Ching-Tong is most frequently as tertiary nodes (accounting for 32%).

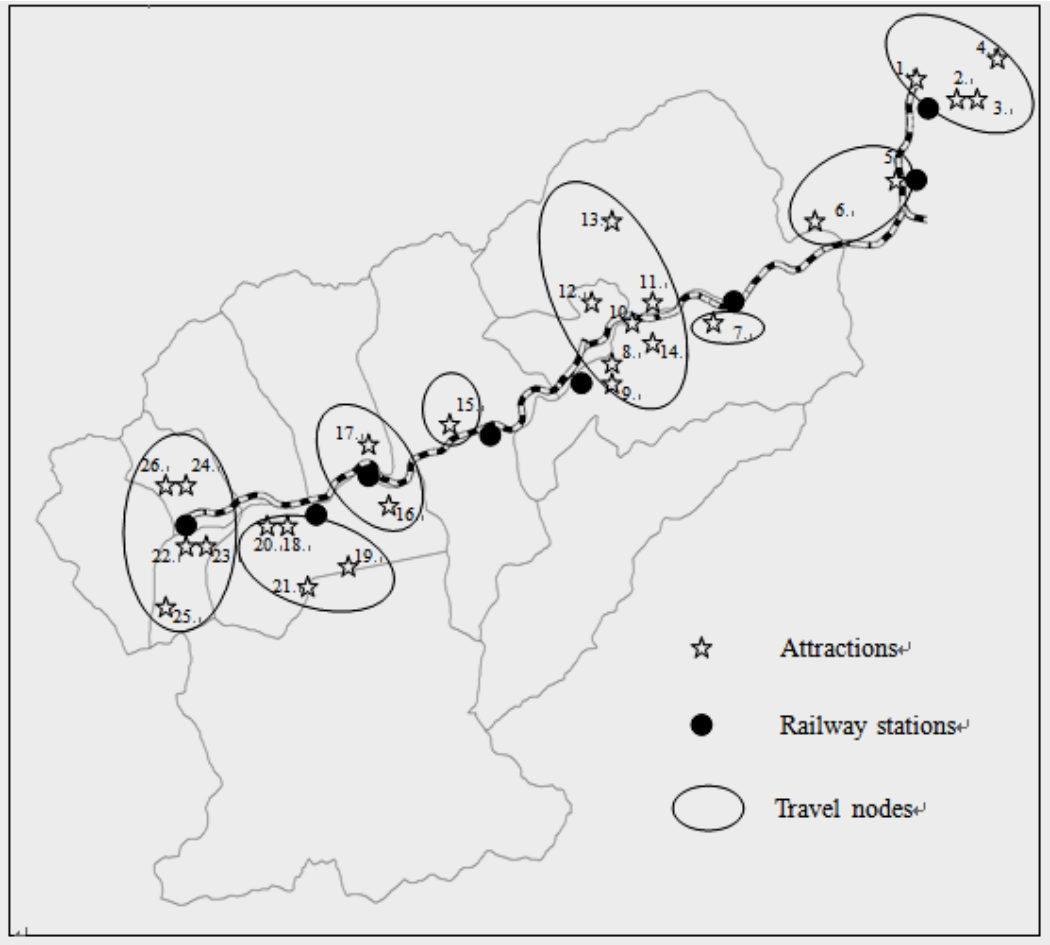


**Fig.1** Attractions and travel nodes within this destination zone

**Table.ll** Attractions within this destination zone

| | | |
|---|---|---|
| 1. Cat Village | 10. Eyeglasses Shaped Water Fall | 19. Xiao-Zi-Shan Hiking Trail |
| 2. Hou-Tong Coal Mine Ecological Park | 11. Shi-Fen Water Fall | 20. Guan-Yin Rock |
| 3. Hou-Tong Japanese Shrine Relics | 12. Taiwan Coal Mine Museum | 21. Ci-Mu-Feng、Pu-Tuo-Feng Hiking Trail |
| 4. Hou-Tong Coal Bridge | 13. Wu-Fen Hiking Trail | 22. Ching-Tong Old Street |
| 5. San-Diao-Ling Hiking Trail | 14. Si-Guang Lake | 23. Ching-Tong Industry Livelihood Hall |
| 6. San-Diao-Ling Water Fall | 15. Wan-Gu Water Fall | 24. Shi-Di Coal Mine Relics |
| 7. Da-Hua Pot Hole | 16. Western Style Red-brick Building | 25. Tai-Yang Japanese Style Dormitories |
| 8. Shi-Fen Old Street | 17. Ling-Chiao Water Fall | 26. Ching-Ton Coal Mine Memorial Park |
| 9. Jing-An Drawbridge | 18. Ping-Shi Old Street | |

**Table.III** Popular attractions within this destination zone

| Popular attractions of the travelers | Share of all travelers | Attractiveness |
|---|---|---|
| 1.Cat Village | 65% | Cat-themed culture |
| 2.Shi-Fen Old Street | 47% | Nostalgic culture |
| 3.Ping-Shi Old Street | | |
| 4.Ching-Tong Old Street | | |
| 5.Shi-Fen Water falls | 20% | Terrain landscape |
| 6.Hou-Tong Coal Mine Ecological Park | 16% | Mining culture |
| 7.Taiwan Coal Mine Museum | | |
| 8.Ching-Tong Industry Livelihood Hall | | |
| 9.Ching-Tong Coal Mine Memorial Park | | |
| 10.Xiao-Zi-Shan Hiking Trail | 5% | Natural scenery |
| 11.Wu-Fen Hiking Trail | | |
| 12.Ci-Mu-Feng Hiking Trail | | |

Note:Each traveler can have more than one choice for their popular attractions.

**Fig.2** Travel nodes on the functional demension within the Ping-Shi destination zone

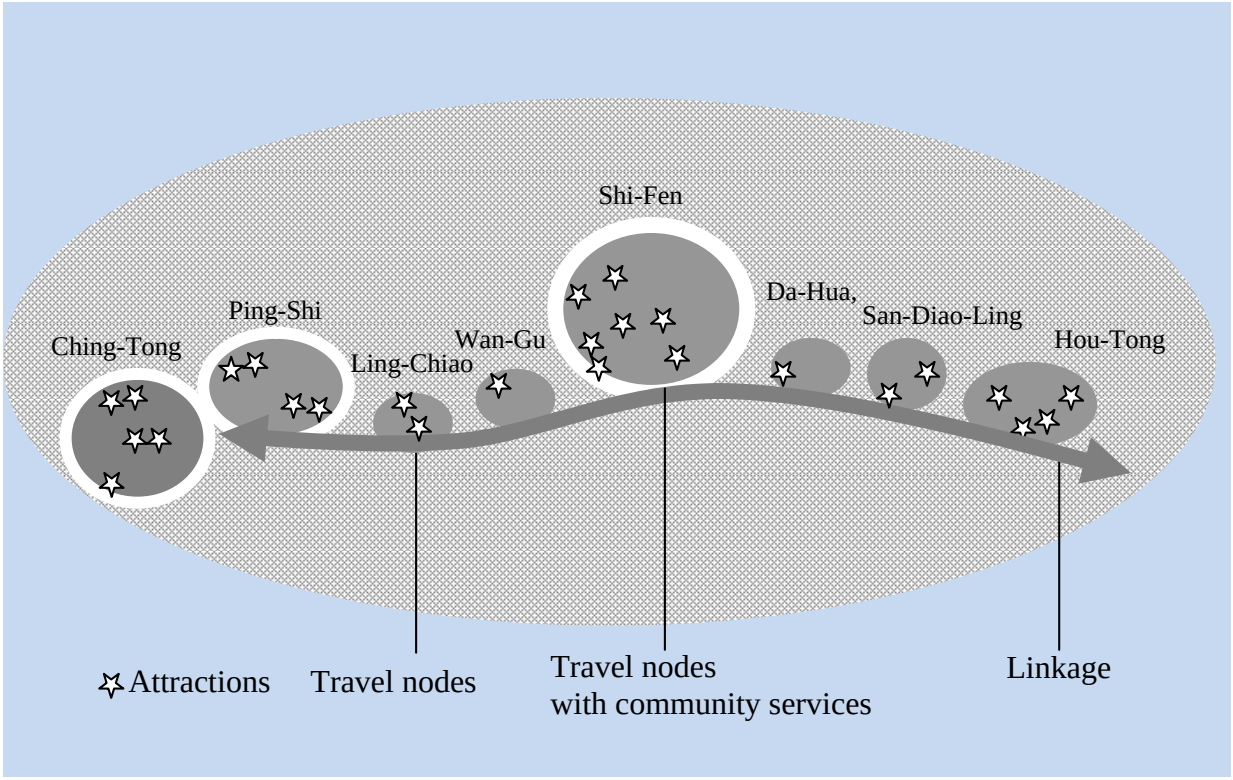

**Table.Ⅳ** The different ranks of travel nodes of the travelers for each itinerary

| Travel nodes | As primary nodes | As secondary nodes | As tertiary nodes |
|---|---|---|---|
| 1.Hou-Tong | 72 (24%) | 54 (18%) | 75 (25%) |
| 2.San-Diao-Ling | - | 12 (4%) | 9 (3%) |
| 3.Da-Hua | 6 (2%) | 3 (1%) | 3 (1%) |
| 4.Shi-Fen | **147 (49%)** | 66 (22%) | 3 (1%) |
| 5.Wan-Gu | 3 (1%) | - | 12 (4%) |
| 6.Ling-Chiao | - | 3 (1%) | 48 (16%) |
| 7.Ping-Shi | 45 (15%) | **108 (36%)** | 54 (18%) |
| 8.Ching-Tong | 27 (9%) | 54 (18%) | **96 (32%)** |
| The totals | **300 (100%)** | **300 (100%)** | **300 (100%)** |

Source: questionnaires survey (2011~2012)

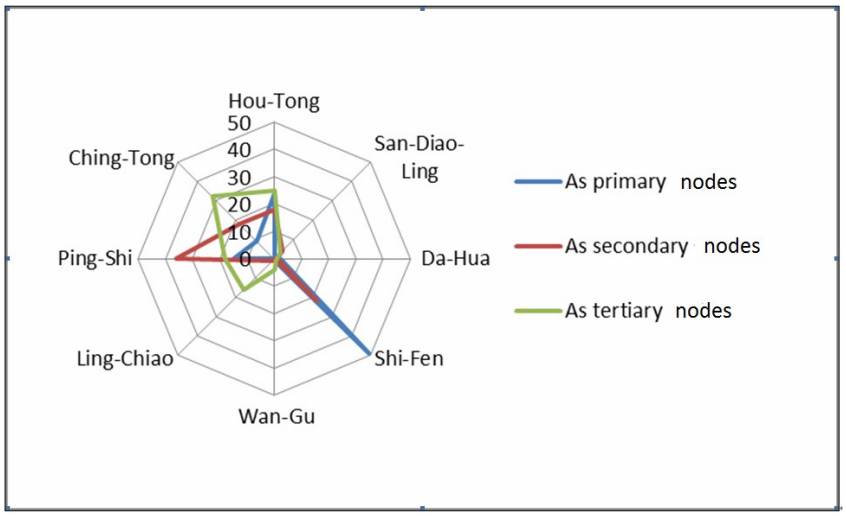


**Fig.3** Primary nodes, secondary nodes and tertiary nodes within this destination zone

Table Ⅴ The correlation analysis between different chained destination zones and the traveler's origins

| Traveler's origins | Taipei area -Ping Shi | Taipei area -Ping Shi -Hualien area | Ping Shi -Hualien area | Ping Shi -Taichung area |
|---|---|---|---|---|
| 1.Taiwan northern region | 75 (50%) | - | 4 (3%) | - |
| 2. Taiwan central region | 36 (24%) | 6 (4%) | - | - |
| 3.Taiwan southern region | 19 (13%) | 3 (2%) | - | 3 (2%) |
| 4.International tourists | - | 4 (3%) | - | - |
| Sub-Totals (percentage) | 130 **(87%)** | 13 **(8%)** | 4 **(3%)** | 3 **(2%)** |

Source:150 questionnaires surveyed at 5 accommodation sites.

### Ping Shi destination zone types

As Dredge (1999) already discussed, the multiple-node destination zone describes the situation where a destination zone comprises more than one travel node. Based on the analysis of 150 questionnaires at 5 accommodation sites within this study area, all the destination zone types of 150 questionnaires were belonged to multiple-node destination zone types, and meanwhile they also could be referred to several chained destination zone types by connecting either single-node destination zones and/or multiple-node destination zones, which were Taipei area-Ping Shi chained destination zone, Taipei area-Ping Shi-Hualien area chained destination zone, Ping Shi-Hualien area chained destination zone and Ping Shi-Taichung area chained destination zone, among which Taipei area-Ping Shi one accounts for the largest proportion of 87%, while Taipei area-Ping Shi-Hualien area one, Ping Shi-Hualien area one and Ping Shi-Taichung area account for 8%, 3% and 2% respectively.

Table V with two axes representing the travelers' origins and the destination zone types reveals that different travel's origins had different chained destination zone types (Pearson's $r$ value is 0.446 , $P<0.01$; Spearman's $r$ value is 0.437, $P<0.01$). The travelers from Taiwan northern and central regions both trends to chained destination zone types of Taipei area-Ping Shi one, accounting for 50% and 24%.

## Conclusions

An increase in Taiwan northern region implies a general reduction in other regions of Taiwan after questionnaires samples are obtained. In the case of the Taipei area-Ping Shi chained destination zone, the origins may become the important influencing factor on the determined level of performing this destination zone type. It also can be realized that origins to the travelers on the variety will be illustrated within this destination zone by a model suggested by Dredge in her 'destination zone type' (index of travel nodes); the different type from Taipei area-Ping Shi through Taipei area-Ping Shi-Hualien area and Ping Shi-Hualien area to Ping Shi-Taichung area. More recent research (Dwyer *et al.* 2000; Lew & McKercher 2002; Lohmann & Pearce 2010; Alberti & Giusti 2012) has shown that measuring tourism nodal functions to destination competitiveness is necessarily by identifying spatial structure of destination zone or on the perspective of spatial clustering of travel nodes. It is a more complex function, related to the characteristics of travel nodes and rank levels, and the specific types of the destination zone involved. This research is an empirical application of Gunn's and Dredge's models, which raises important conceptions that need to be realized by the related managers. For example, what type of destination zone is most available for the travelers? How does the destination zones fit into the broader spatial scale of tourism activity in the country?

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