



A spatial–temporal analysis of hotels in urban tourism destination



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ABSTRACT

This study investigates the spatial associations of urban tourism phenomena by using GIS and statistical methods to examine the relationships between hotels and land use types, attractions, transportation facilities, and the economic variables of the tertiary planning units in which the hotels are located. Hong Kong is used as an example. The study first introduces the spatial characteristics of hotels and attractions development in Hong Kong. A geographical information system is then used to map hotels and investigate the characteristics of the land use, attractions, and transport facilities around hotels. The spatial relationships are then analyzed with a set of logistic regression models. The results reveal that commercial land type and the number of attractions around hotels are significantly related to the distribution of upper-grade hotels in Hong Kong. The determinants vary over time and the spatial structure changes accordingly. The analysis is important theoretically as it enriches the methodologies for analyzing the relationships between hotels and urban structure, and for conceptualizing and identifying tourism functional zones. It is important for practitioners as it provides useful information for selecting sites for hotels.

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1. Introduction

Interest in urban tourism has grown since the 1980s when it was first recognized as a distinct field (Edwards et al., 2008). Within the field, the spatial structure of tourism in cities has been an important research area (Pearce, 1998), focusing on the ways in which phenomena are arranged in space, and how this affects urban tourism planning and design applications. One important research direction is to empirically analyze the distribution of tourism-related phenomena, such as selected attractions, supporting facilities (Pearce, 1995), and accommodations in general, hotels in particular. These studies have identified distinct distribution patterns of particular tourism sectors in certain parts of cities, the most notable being clustering and linear patterns; these patterns can be explained by factors such as accessibility, land rent, planning restrictions, comparative shopping, and proximity to other tourism-related phenomena (Ashworth and Tunbridge, 1990; Pearce, 1987, 1995). However, previous studies have largely focused on the influence of the surrounding environment on the selected tourism sector, and have not fully addressed

the interactions and associations between all of the urban tourism phenomena.

The current study is therefore carried out to use geographical information system (GIS) tools and statistical models to investigate the spatial associations of urban tourism phenomena by examining the spatial relationships between hotel distribution and land types, attractions, and other surrounding environmental factors in Hong Kong. More specifically, this study attempts to (1) analyze the factors that affect the location strategies of upper-grade hotels; and (2) identify factors that influence changes in spatial patterns after a hotel's establishment. To achieve these objectives, the association between the level of hotels and the environmental characteristics around the hotels from 2000 to 2010 are investigated using a set of logistic models.

2. Literature review

2.1. Spatial structure of urban tourism

Cities have been among the most significant tourist destinations since urbanization began (Edwards et al., 2008; Karski, 1990). Nowadays, tourism occupies substantial amounts of space within urban destinations via tourist-historic urban cores, museums of all kinds, urban waterfronts, theme parks, and specialized precincts (Edwards et al., 2008). However, before the 1980s, studies of urban tourism were fragmented and it was not recognized as a distinct

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field (Edwards et al., 2008). An upsurge in interest in urban tourism was sparked by Ashworth's work in 1989, in which he stated that "...the failure to consider tourism as a specifically urban activity imposes a serious constraint that cannot fail to impede the development of tourism as a subject of serious study" (Ashworth, 1989:33). In his pioneer work, Ashworth (1989) outlined four extant approaches to analyzing urban tourism: (1) the facility approach, which focuses on the spatial analysis of the location of tourism attractions, facilities, infrastructure, and zones; (2) the ecological approach, which focuses on the structure and morphology of urban areas and features the identification of functional zones or districts such as central business districts (CBD); (3) the user approach, which adopts a marketing perspective focused on tourists; and (4) the policy approach, which is concerned with a range of policy issues including infrastructure provision and destination marketing (Ashworth, 1989).

Establishing the spatial structure of tourism in cities has been an ongoing concern within the urban tourism research field from an early stage (Pearce, 1998). From a supply-side perspective, this reflects an inherent interest in the ways in which phenomena are arranged in space, and the implications for urban tourism planning and design applications. Two broad approaches are taken to this issue: (1) empirically analyzing the distribution of tourism-related phenomena, especially accommodation; and (2) conceptually examining the existence and functioning of tourist districts, particularly with regard to heritage and planning.

Most of the distributional studies have focused on one particular sector of the tourism industry, most commonly on accommodation and hotels. The distribution of selected attractions and supporting facilities has also been examined in these studies (Pearce, 1995). The studies carried out to date have established distinct distribution patterns, particularly clustering and linear patterns, in tourism-related phenomena in certain parts of cities. The distribution pattern of a city's tourist phenomena can be explained by factors such as accessibility, land rent, the recency effect, planning restrictions, comparative shopping, and proximity to other tourism-related phenomena (Ashworth and Tunbridge, 1990; Pearce, 1987, 1995).

Based on previous studies, Pearce (2001) outlined an integrative framework for urban tourism and illustrated applications with reference to selected aspects of the literature. The framework emphasized the identification of subject cells within a matrix defined in terms of scale (site, district, city-wide, regional, national, and international) and themes (demand, supply, development, and impacts). For instance, Rigall-I-Torrent et al. (2011) examined the effects of beach characteristics (such as beach length, width, sand type, or beach services) and distance of a hotel from the beach on sun-and-beach hotel prices at the regional level. A study at the city level by Yang et al. (2012) investigated potential factors contributing to hotel location choice in Beijing by incorporating both hotel and location characteristics. They found that star rating, years since opening, service diversification, ownership, the agglomeration effect, public service infrastructure, road accessibility, subway accessibility, and accessibility to tourism sites are all important determinants. While Ruggero and Rodolfo (2014) found that structural social capital is the strongest positive determinant of hotel performance, compared with weaker and generally not significant relations linking occupancy and control variables, such as category, size, location.

Our review of the distributional literature identified two research gaps. First, current studies have failed to provide an integrated interpretation of how tourism in an urban area is related to surrounding spatial elements such as land use types, and therefore the spatial associations were not well explained. Second, few studies have examined the temporal variations in the spatial relationships between hotel location and surrounding environmental factors. GIS is a useful tool for tackling these research problems.

Geographical information systems (GIS) have been used to develop a number of applications for tourism that allow the analysis of regional information (Poslad et al., 2001). They can be divided into two basic categories: (a) spatial decision support applications and (b) spatial statistics support applications. The former uses GIS systems that are specifically designed to handle spatial relationships to integrate four types of relevant data: tourist characteristics (e.g., Lau and McKercher, 2006), actual temporal-spatial behavior (e.g., Shoval et al., 2011), landscape elements and tourist locations (e.g., Brown, 2006), and the images added to these locations (e.g., Gaughan et al., 2009). Then, a decision-support model is added to the GIS to analyze the overall temporal-spatial behavior and to obtain some optimal conclusions (Bahaire and Elliott-White, 1999; Beedasy and Whyatt, 1999; Bertazzon et al., 1997; Boers and Cottrell, 2007; Brown, 2006; Dye and Shaw, 2007; Gaughan et al., 2009; Lau and McKercher, 2006; Perez et al., 2003; Shoval et al., 2011; Van der Knaap, 1999). The second type of application uses GIS not only to integrate data, but also to analyze the spatial patterns of tourism (Allen et al., 1999; Atasoy, 2010; Farsari and Prastacos, 2004; Porter and Tarrant, 2001). Allen et al. (1999) developed a parcel-based GIS model for assessing land-use change in the past; they built a spatial multivariate logistic regression model and selected 20 variables to predict the possibilities of land-use change for Murrells Inlet, South Carolina. However, the study focused on land-use change in a coastal tourism destination area without investigating the relationship between tourism phenomena and the changes in land use.

2.2. Factors influencing the location distribution of hotels

Hotel location selection is a critical element of destination management strategy. The understanding of the determinants of hotel location selection is key to ensure coherent spatial planning at tourism destinations (Issahaku and Francis, 2013). According to previous studies, the main research approach used to explain location choices and spatial patterning of hotels are regression methods based on economic theory (e.g., Zhang et al., 2012; Yang et al., 2014). The explanatory variables in these regression models are related to labor, culture, capital, and policy characteristics. In addition, as the hotel industry is closely linked to the real estate industries, which are significantly driven by economic conditions and external events, factors that affect these industries should be included in the analysis of the location of hotels (e.g., Yang et al., 2012). For instance, Porter and Tarrant (2001) identified and examined inequalities in federal tourism sites and campsites in Southern Appalachia based on five socioeconomic variables including race, education, household income, occupation, and local heritage.

Spatial characteristics are also regarded as important determinants of hotel locations. Tourism accommodation comprises a bundle of private attributes located in a specific physical environment which embeds public attributes, such as natural environment, public safety or cultural heritage (Albert et al., 2014). Seul (2015) found that hotels compete with more distant neighbors of similar quality than those who are quality-differentiated. In addition, the results also suggest possibility of cooperation among neighboring hotels similar in quality. To increase the demand, hotels are likely to be located in places that are proximate to their potential markets. They are usually highly clustered so as to obtain benefits from agglomeration effects. Barros (2005) found that hotels close to their potential markets are more efficient than their counterparts that have poor accessibility. A model proposed by Yokeno (1968) indicated that in a mono-centric city, spatial centrality is observed among hotels, due to the large demand for accommodation in the city center such as the central business district (CBD) or the tourist district (Yokeno, 1968; Shoval, 2006). Weaver (1993) argued that

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