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Exploring a theme park's tourism carrying capacity: A demand-side analysis

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HIGHLIGHTS

- Propose a conceptual framework of Theme Park Capacity System.
- Identify fundamental, mediating, and direct determinants of a theme park's tourism carrying capacity.
- Theme park attendance directly and/or indirectly affects visitor experience, satisfaction, and behavioral intention.
- Theme park attendance moderates the effects of visitor experience on visitor satisfaction and behavioral intention.

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ABSTRACT

To better understand a theme park's tourism carrying capacity (TCC), this paper proposes a conceptual framework that classifies the determinants of theme park TCC across three levels: fundamental determinants, mediating determinants, and direct determinants. The authors empirically tested a portion of the framework from the demand side by surveying 1356 visitors at a theme park in China. PLS path modeling, one-way ANOVA, linear regression, and multi-group moderation tests were used to analyze the impacts of attendance from a visitor perspective, day perspective, and visitor perspective at different attendance levels. Results indicate that theme park attendance either directly and/or indirectly affects visitors' experience, satisfaction, and behavioral intention. Theme park attendance also moderates the effects of visitors' experience on visitor satisfaction and behavioral intention, all of which determine a theme park's TCC. Corresponding management practices are recommended based on these results.

1. Introduction

Long waiting times at theme parks contribute to unsatisfactory visitor experiences. Theme park visitors typically spend 20% of their time experiencing attractions but over half their time waiting (Lith, 2000). In fact, as much as 80% of visitors' time could be spent waiting during peak seasons (Zhang, Su, & Hu, 2012). Even the most well-known theme park brand, Disney, overestimated its ability to manage larger-than-expected attendance during its opening year in Hong Kong, resulting in frequent visitor complaints (Xinhua News Agency, 2006).

Theme parks generally require much longer waiting times than other tourist attractions, intensifying visitors' sense of congestion during peak seasons. Yet theme parks are comparatively empty during off-seasons, which often results in excessive operating costs. Fluctuations in demand further complicate theme parks' tourism carrying capacity (TCC). TCC is defined as "the maximum number of people that may visit a tourist destination at the same time, without causing destruction of the physical, economic, socio-cultural environment and an unacceptable decrease in the quality of visitors' satisfaction" (World Tourism Organization [UNWTO], 1981). For the purposes of this paper, the authors focus on the criterion "without causing an unacceptable low visitor satisfaction level" (i.e., psychological carrying capacity). To cope with swiftly changing demand, theme parks must make optimal use of their resources to maximize TCC. Park managers should therefore be

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familiar with the determinants of theme park TCC and the extent to which managers' roles influence it. To these authors' knowledge, no framework presently exists that identifies direct and indirect determinants of theme park capacity. This article proposes, and partially tests, such a framework in hopes of facilitating TCC management.

2. Theme park TCC system

Theme park TCC is determined by a host of factors, many of which appear not to affect TCC directly yet are not negligible. The following review summarizes TCC determinants from most fundamental to most direct.

2.1. Determinants of perceived experience

2.1.1. Perceived experience

Theme park visitors have at least two types of experiences that warrant focused research: attraction experience and wait experience. *Attraction experience* can be measured by the number of attractions visited and/or experience value (i.e., the perceived value of the tourist experience) of attractions visited (Prebensen, Woo, & Uysal, 2014). The number of attractions visited per person (henceforth referred to as the "visited-attraction number") is restricted by waiting time. Wait experience can be measured in several ways: tolerable waiting time; waiting time; wait proportion (i.e., the ratio of waiting time to one's entire length of stay in the park); or individuals' comfort while waiting. Appropriate waiting times enhance visitors' anticipation, thereby improving the theme park experience (Hege, Offermans, & Frens, 2009). Waiting time and line length are indicative of an attraction's experience value because visitors decide how long they wish to wait at an attraction (Tibben-Lembke, 2007). Lin (2008) found that if visitors cannot tolerate waiting, they will evaluate a theme park's waiting service quality poorly. Zhang et al. (2012) also used visitors' maximum tolerable waiting time as a parameter when calculating theme park TCC. Similarly, Chang and Hou (1996) found that perceived waiting time influences visitors' perception of crowding and reflects a theme park's usage versus its capacity.

Experience-related variables, such as experience value, visited-attraction number, and waiting time, play different roles in visitor satisfaction. As suggested by Kano, Seraku, Takahashi, and Tsuji (1984), visitor satisfaction is closely related to attractive, one-dimensional, must-be, indifferent, and reverse quality attributes, each of which contributes to visitor satisfaction and/or dissatisfaction. For instance, *attractive quality* leads to customer satisfaction, but its absence does not cause dissatisfaction. The opposite is true for *must-be quality*. When fulfilled, *one-dimensional quality* creates satisfaction; without it, visitors are dissatisfied. Perhaps unsurprisingly, customers are indifferent to the *indifferent quality* element. Excessive *reverse quality* is dissatisfying. Discovered quality may vary with time (Kano, 2001). The roles of experience-related variables as quality elements at different attendance levels, will be discussed later in the context of this study's results.

A variety of factors related to attendance, visitors, facilities, management, and expected experience may affect theme park visitors' perceived experience. These variables are discussed in greater detail in the following sections.

2.1.2. Attendance factors

Several studies have shown that attendance affects theme park visitors' perceived experience. For instance, Reckard (2001) found that an increase in theme park attendance lowered the visited-attraction number, as might be expected. Increased attendance has also been shown to inflate visitors' waiting time (Tibben-Lembke, 2007), wait proportion (Lith, 2000), and tolerable waiting time (Liang, 2009). Traditional capacity models also suggest that the level of theme park use increases visitors' perception of crowding and therefore impedes satisfaction (Graefe & Vaske, 1987). Interestingly, excessively low attendance also compromises visitors' experience (Ahmadi, 1997), which in fact makes sense: a cheerful atmosphere is difficult to cultivate when there are too few customers.

2.1.3. Visitor factors

The literature indicates that visitor factors, including demographics, psychographics, and tripographics, can affect visitors' perceived experience (e.g. Abd Aziz, Ariffin, Omar, & Evin, 2012; Dong & Siu, 2013; Liang & Dong, 2011). Demographically, Liang and Dong (2011) found that males tolerated longer waiting times and greater attendance than females in a Chinese theme park, whereas senior visitors were more sensitive to crowding than other age groups. In contrast, earlier research by Freedman, Levy, Buchanan, and Price (1972) found that males were more sensitive to crowding, as were visitors with higher incomes, more education, and better socioeconomic status (Fleishman, Feitelson, & Salomon, 2004; Jurado, Damian, & Fernández-Morales, 2013). These visitors were also less satisfied with long waiting times and were therefore thought to have a lower psychological carrying capacity than other visitors. Age and education level specifically have been found to influence visitors' perception of reasonable waiting times, but not their tolerable waiting time (Liang & Dong, 2011).

Psychographic factors can also influence visitors' sensitivity to crowding and waiting based on how highly they value a service (Maister, 1984), how accustomed they become to waiting (Durrande-Moreau, 1999), their psychological adaptation to tourist area usage (Stankey, 1982), and their overall motivation (Pearce, 1982). In addition, tripographic characteristics have been found to influence visitors' wait and crowding tolerance, such as being accompanied by companions (Maister, 1984), the types of activities in which visitors engage (Santana-Jiménez & Hernández, 2011), and their familiarity with a destination (Jurado et al., 2013).

2.1.4. Facility factors

Theme park visitors' perceived experience also appears to be influenced by facility factors, including a park's spatial layout and attractions' capacity, number, experience value, and type. For instance, Zhang, Su, Li, and Hu (2013) noted that theme parks with multiple attractions and large capacities allow visitors to experience more attractions and shorter waiting times. Visitors' perceived experience quality also improves when visiting attractions with higher experience values (Zhang et al., 2013). If visitors' expectation of experience is considered constant (Ahmadi, 1997), then the higher the experience value of each attraction, the fewer attractions a visitor needs to experience to be satisfied. Zhang et al. (2013) found that adult rides typically require longer waiting times than entertainment shows in theme parks. Zhang et al. (2013) determined that a theme park's spatial layout (e.g., spatial path pattern and positions of attractions and gates) and attraction features (e.g., types, experience value, capacity, and floor area) also affect visitors' attendance, visit sequence, waiting time, traffic, and visitor density distribution. Likewise, Stokols (1972) contended that the spatial organization of a tourist area influences visitors' perceptions of crowding.

2.1.5. Management factors

Many studies reveal that theme park visitors' perceived experience could be improved by enacting management strategies to enrich visitors' waiting experience and optimize theme park TCC. For example, Cope III, Cope, and Davis (2008) found that Disney theme parks could greatly reduce waiting time and wait proportion