



Discussion paper

# The moderating effect of perceived spatial crowding on the relationship between perceived service encounter pace and customer satisfaction

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## ABSTRACT

This study examines the moderating effect of perceived spatial crowding on the perceived service encounter pace–customer satisfaction relationship in a restaurant context. Findings indicate a curvilinear relationship between perceived pace and customer satisfaction when spatial crowding is perceived as low. As perceived spatial crowding increases, the curvilinear nature of the relationship between perceived pace and satisfaction begins to flatten out, with no evidence of curvilinearity at relatively high levels of perceived spatial crowding. This suggests that an opportunity exists to increase pace without engendering a negative impact on customer satisfaction. The implications for theory and revenue management practice are discussed.

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## 1. Introduction

Price and time are widely acknowledged as two key strategic levers of revenue management (RM). Price, in the form of intelligent discounting, is used to stimulate demand and increase capacity utilization during low demand periods, while a focus on maximizing price during high demand periods ensures that the revenue associated with the sale of available capacity is optimized. In terms of time management, firms seek to control the duration of consumer usage of a given service such that capacity utilization and customer throughput rate is maximized. More recently, a third strategic lever of RM has been formally recognized: space (Kimes and Renaghan, 2011). Within RM, the focus is on maximizing revenue per available space for a given time unit (RevPAST). For example, in hotels the goal is to maximize revenue per available room-night, while, for restaurants, the objective is to maximize revenue per available seat-hour. Thus, implicit in the notion of maximizing RevPAST is the management of space as well as price and time, with decisions regarding the subdivision and configuration of available space directly influencing capacity utilization and associated revenues.

All three RM levers have received attention in the literature. However, to our knowledge, there has been no research that has jointly considered the RM dimensions of time and space. In the current study, we seek to contribute to the existing literature by examining time and space management from a consumer perspective. Specifically, we examine, in the context of extended hedonic restaurant experiences, the moderating effect of perceived spatial crowding, as a function of table space management, on the relationship between perceived service encounter pace and customer satisfaction. The management of service encounter pace is an important aspect of restaurant RM. Within a restaurant context, time is sold to consumers as an event rather than for a contracted amount of time. Therefore, a goal of restaurant RM is to minimize service encounter duration during high demand periods such that customer throughput rate, and associated revenue, is maximized. Pace is a key driver of meal duration (Lee and Liebenau, 2000), hence the acceleration of service encounter pace can assist in minimizing service encounter duration. Similar to pace, restaurant operators can leverage space management strategies to maximize customer throughput rate. For example, space management in the form of closely-spaced tables has been demonstrated to shorten the dining cycle without negatively impacting customer spend (Robson and Kimes, 2009).

While the short-term benefits associated with pace, and table space, management practices are appealing, consumer reaction to such practices must be considered. Prior research has demon-

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strated the negative effect that perceived service encounter pace can have on customer satisfaction. For example, [Noone et al. \(2007\)](#) found that satisfaction is maximized at a moderate perceived pace, with satisfaction negatively impacted by a slow or fast perceived pace. Equally, in the domain of space management, [Robson et al. \(2011\)](#) demonstrated the negative impact that tight table spacing can have on consumers' behavioral intentions and emotional responses to a restaurant experience. Here, we explore the interplay of perceived spatial crowding, as a function of table spacing, and service encounter pace. We draw on the literature relating to perceived spatial crowding and coping strategies to suggest that the perceived pace–customer satisfaction relationship is moderated by consumers' perceptions of spatial crowding. We also explore the practical implications of the inter-related nature of time and space management for restaurant RM.

In the following section, relevant literature in the domains of RM, perceived crowding, and coping strategies is reviewed. A description of the research methodology employed to test the study's hypotheses, and the empirical results of the study are then provided. The paper concludes with a discussion of the implications of the study's findings for management practice and future research.

## 2. Conceptual background

### 2.1. The three strategic levers of RM

Of the three strategic levers of RM, consumer reaction to price has arguably received the most attention in the literature, from studies of the perceived fairness of RM pricing and associated rate fences (e.g., [Choi and Mattila, 2006](#); [Chung and Petrick, 2015](#); [Kimes and Wirtz, 2002, 2003](#); [Kuo et al., 2016](#); [Wirtz and Kimes, 2007](#)), to those that explore the role of price in consumer choice (e.g., [Guillet et al., 2014](#); [Guillet and Xu, 2013](#); [Noone and McGuire, 2013](#)). Relative to price, time and space have received less attention, yet an understanding of the impact of time and space practices on consumer behavior is essential to the development of appropriate time and space management strategies.

#### 2.1.1. Time management

The time dimension of RM encompasses practices for arrivals management (e.g., overbooking to reduce arrivals uncertainty), and duration management ([Kimes and Chase, 1998](#)). Duration management refers to practices to both control consumers' length of use of a given service, and reduce the changeover time between consumers. It is the duration control aspect of time, specifically the control of service encounter duration, that is relevant to this study.

When time is sold explicitly, it is sold for a contracted amount of time (e.g., a hotel room for a night or a rental car for a day). In contrast, companies that implicitly sell time do so as an event, for example, a meal in a restaurant or a round of golf ([Kimes and Renaghan, 2011](#)). In the latter context, the operator is less able to predict service duration so a potential goal of RM is to minimize service encounter duration during high demand periods such that customer throughput rate and revenue is maximized. A number of researchers have discussed the revenue benefits associated with reducing service encounter duration ([Kimes, 1999](#); [Kimes et al., 2002](#)). While [Thompson \(2009\)](#) suggests that the revenue bump may not be as significant as previous research suggested, evidence from the field regarding the revenue impact of service encounter duration reduction reinforces duration minimization as a viable RM strategy ([Bhatia, 2002](#)). Pace and duration represent two separate but closely-related dimensions of time ([Meyer-Sahling, 2007](#)), with duration dependent on pace ([Schriber and Gutek, 1987](#)). Therefore, as a key driver of service encounter duration, pacing becomes an

important component of a RM strategy ([Lee and Liebenau, 2000](#)). Actions taken by operators to accelerate service encounter pace and reduce encounter duration, for example decreasing the time between steps in the service delivery process, may be perceived negatively by the consumer ([Noone et al., 2007](#)). Therefore, before leveraging pace to manage service encounter duration, operators need to understand the potential impact of pace acceleration on customer satisfaction, as well as the variables that may influence the nature of the perceived pace–satisfaction relationship.

A number of studies have examined consumer reaction to service encounter pace in the context of extended hedonic restaurant experiences (e.g., [Noone et al., 2007, 2009](#)). Perceived pace has been conceptualized as a continuum, with two polarities: very slow and very fast ([Noone et al., 2007](#)). Drawing on optimal arousal theory ([Berlyne, 1967, 1971](#); [McClelland et al., 1953](#); [Steenkamp and Baumgartner, 1992](#)), [Noone et al. \(2007\)](#) found that the relationship between consumers' perceptions of service encounter pace and their satisfaction with a service encounter follows an inverted U-shape. In other words, as pace increases, satisfaction increases, but only up to a point, beyond which it decreases as perceived pace continues to increase. However, prior research also suggests that there are a number of variables that may moderate the perceived pace–satisfaction relationship. For example, [Noone et al. \(2007\)](#) examined the impact of service encounter stage on the relationship between perceived service encounter pace and customer satisfaction, and found that consumers exhibit a greater tolerance of a faster pace during the post-process stage, than during the pre-process or in-process stages, of the service experience. Restaurant type has also been shown to impact consumers' reaction to service encounter pace, with lower satisfaction ratings associated with a faster perceived pace for fine-dining restaurants than for casual and upscale casual restaurants ([Noone et al., 2009](#)). Equally, consumers' perceived control over pace has also been shown to moderate the perceived pace–satisfaction relationship, with consumers exhibiting less sensitivity to variations in pace when their perceived control of pace is high ([Noone et al., 2012](#)).

[Kimes and Wirtz \(2015\)](#) underscore the importance of understanding the interplay between space and time management for RM such that an effective RM strategy can be deployed. Hence, in this study we focus on the moderating effect of perceived spatial crowding, as a function of table space management, on the perceived pace–satisfaction relationship, and seek to understand the potential for space-related conditions to mitigate the negative effects of an accelerated pace. While pace acceleration is pivotal to revenue maximization, we consider the full pace continuum in this study to better understand the relative impact of a fast perceived pace on customer satisfaction across different levels of perceived spatial crowding.

#### 2.1.2. Space management

As in other environments where RM is applied, the space, or capacity, of a restaurant is relatively fixed so available space must be carefully designed and configured such that capacity utilization is maximized during periods of high demand ([Kimes and Wirtz, 2015](#)). Like time, space can be sold explicitly or implicitly ([Kimes and Renaghan, 2011](#)). Selling space explicitly means selling a specific, and well-defined, amount of physical space. For example, a self-storage facility rents space based on the physical size of the space and storage capacity. In contrast, firms that sell space implicitly configure available physical space into inventory types that meet consumer needs (e.g., different types of hotel guest rooms, tables in a restaurant, or seats on a plane). [Kimes and Renaghan \(2011\)](#) point to the advantages of selling space implicitly. Firms can control the way in which the space is sold, enabling them to maximize space utilization while also allowing them to design the

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