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#### International Journal of Hospitality Management

journal homepage: www.elsevier.com/locate/ijhosman



#### Research paper

## Joint effects of management responses and online reviews on hotel financial performance: A data-analytics approach



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#### ARTICLE INFO

#### Article history: Received 5 March 2016 Received in revised form 29 November 2016 Accepted 12 December 2016

Keywords:
Management response
Online reviews
Financial performance
Data analytics
Social media
Hotels

#### ABSTRACT

Hotels are increasingly shifting their online review strategy from passive listening to proactive engagement through management responses. This study investigates the joint effects of management responses and online reviews on hotel financial performance. Based on a large unique dataset of 22,483 management responses to 76,649 online consumer reviews on TripAdvisor over 26 quarters, matched with quarterly hotel financial performance, this study finds that providing timely and lengthy responses enhances future financial performance, whereas providing responses by hotel executives and responses that simply repeat topics in the online review lowers future financial performance. Moreover, review rating and review volume moderate the effects of management responses. When the average review ratings increase, more management responses of greater length should be provided. As review volume grows, the benefits of providing timely and lengthy responses diminish. The study findings generate new implications for managing responses to online reviews to increase hotel financial performance.

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#### 1. Introduction

The proliferation of third-party review sites such as Yelp and TripAdvisor significantly expands consumers' opportunities to generate publicly available commentaries on a hotel. As a result, scholars have called for hotel managers to respond to reviews (Chan and Guillet, 2011; Leung et al., 2013; Sparks et al., 2016; Wei et al., 2013) because management responses may help generate a more positive evaluation of the hotel than reviews without a response (Lee and Song, 2010). Furthermore, providing a response can reduce the likelihood that readers will draw negative, potentially erroneous, inferences (Sparks and Bradley, 2014) and may enhance potential customers' inferences of the hotel's concern for customers (Sparks et al., 2016).

Several studies have reported on the effectiveness of various forms of content or style of management responses. For example, potential hotel guests react more favorably to a rebuttal of a negative review posted by a fellow traveler than they do to a response posted by the hotel management (Litvin and Hoffman,

2012). Additionally, recent research examining the effects of hotel management responses on potential consumers' inferences regarding the hotel's trustworthiness and concern for customers has shown that using a human voice and posting a timely response lead to more favorable customer inferences (Sparks et al., 2016)

While these studies contribute significantly to the management of online reviews, a review of the literature suggests several critical research gaps of practical significance. First, most past studies have focused on reviews' influence on customer perceptions or intentions toward hotels. One exception examined the relationship between the number of management responses and hotel performance (Xie et al., 2014), but did not investigate aspects of management responses that contribute to financial performance—a critical omission, since managers would benefit greatly from information concerning what strategies and communication techniques would enhance their financial performance. Therefore, building on previous research (Sparks et al., 2016; Xie et al., 2014), our study investigates the effects of several important characteristics of management responses on hotel financial performance, including (1) job position of response providers (e.g., executives vs. functional staff/departments), (2) timeliness of the response, (3) length of the response (4) repetition of topics from the online review, and (5) number of responses (or response volume). To assess how each characteristic contributes to hotels' financial performance, we propose our first research question:

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**RQ1:** Do characteristics of a management response affect hotel financial performance?

Second, although prior research has generated overwhelming evidence supporting the significance of online review characteristics such as review valence (e.g., Browning et al., 2013; Sparks and Browning, 2011; Ye et al., 2009; Ye et al., 2011) and review volume (e.g., Duan et al., 2008; Liu, 2006; Zhang et al., 2010) in driving consumer-related outcomes such as booking intentions and trust, these studies fall short of examining the interactive effects of online reviews and management responses on the customer or financial performance. Researchers highlight the need to study the interactive effects of influential factors (Davis and Khazanchi, 2008) and posit that factors such as volume of reviews can change the impact of other word-of-mouth (WOM) relevant characteristics on a WOM message's persuasiveness (Khare et al., 2011). Similarly, research shows that the impact of organizational responses on consumers' external causal attribution and attitude change is moderated by review consensus (Lee and Cranage, 2014). These studies suggest that online reviews may moderate the effects of management responses on customer evaluations and thus the hotel's financial performance. However, such interactive effects have not been formally examined. Therefore, our study investigates the joint effects of two sets of characteristics of online reviews (1) ratings and volume and (2) management responses in terms of executive response, response time, response length, and repetition of topics between responses and reviews. On this basis, we propose a second research question:

**RQ2:** How do online review ratings and volume moderate the relationship between the characteristics of management responses and hotel financial performance?

Finally, much prior research has relied on data generated through survey methods. Our study departs significantly from previous research by adopting an innovative data analytics approach. We employ a large-scale granular dataset containing 22,483 management responses to 76,649 online consumer reviews on TripAdvisor for 3537 hotels in 427 cities over a period of 26 quarters, matched with quarterly hotel performance records at the individual hotel level. Because our data capture the actual behavior of consumers and managers on the social media platform, our analysis opens the door to new knowledge that may reshape understanding of the field as well as support decision making in the hospitality industry (Xiang et al., 2015). This so-called big-data analytics approach leverages researchers' capacity to collect and analyze data to solve real-life problems (Xiang et al., 2015).

Our study also differs from previous management response research (e.g., Gu and Ye, 2014; Sparks et al., 2016) by shifting the focus from customer perception or intention to the key financial performance indicators of revenue, average daily rate (ADR), and occupancy. Our econometric specification models future hotel performance as a function of a number of theoretically justified factors related to online reviews, yet controls for relevant hotel characteristics such as hotel age, size, and class. Examination of the various characteristics of management responses on financial performance is strategically and managerially relevant to hotels, as having employees dedicated to responding to online reviews requires substantial human and financial resources. Understanding how such investment leads to financial outcomes can provide strong justification for investment in offering management responses.

#### 2. Hypotheses development

2.1. Characteristics of management response and hotel performance

#### 2.1.1. Job position of response providers

Important information that affects customer evaluation of the organization is the job position of the person who responds to an

online review. However, previous research on the effect of this key factor is inconclusive. On the one hand, researchers in the service recovery literature find that the lower the organizational level of the person performing the service recovery, the higher the level of customer satisfaction is likely to be (Boshoff, 1997), particularly if recovery is handled by front-line staff (Bowen and Lawler, 1992, 1995; Lewis and McCann, 2004; Miller et al., 2000).

On the other hand, recent empirical research shows that the source of responses (general manager vs. guest service agent) did not make a significant difference in potential consumers' inferences of the hotel's trustworthiness (Sparks et al., 2016). However, the potential effect of job position on customer evaluation and subsequently the hotel's financial performance can be established from literature relating to the credibility of the information source. For example, persuasion studies show that information from high credibility sources produces more attitude change than that from low credibility sources (Eagly et al., 1978; Hovland and Weiss, 1951; Xie et al., 2014). Attribution theory suggests that when source credibility is low, consumers tend to discount the arguments in a message (Eagly and Chaiken, 1975), whereas when source credibility is high consumers are more inclined to accept the message arguments (Mizerski et al., 1979). Credibility in turn leads to superior profit outcomes over time (Roberts and Dowling, 2002) and significantly influences future financial performance (Eberl and Schwaiger, 2005). Therefore, we hypothesize,

**H1.** An executive response is positively associated with future hotel financial performance.

#### 2.1.2. Timeliness of response

Another important characteristic of management responses is the time between a consumer review and the posting of a manager's online reply. Response time is a critical factor, as it indicates the efficiency of the organization (Sparks et al., 2016). The service recovery literature holds that a service failure is more likely to be successfully resolved if the problem is addressed promptly (Hart et al., 1989), suggesting that the time management takes to respond directly affects satisfaction with the complaint handling and repurchase intentions (Mattila and Mount, 2003). Shorter response times result in positive consumer evaluations, such as favorable attributions of stability and controllability (Wirtz and Mattila, 2004), a greater propensity to share information and higher levels of customer praise and recommendations (Swanson and Kelley, 2001), as well as customers' satisfaction with the firm and their subsequent word-of mouth valence (Davidow, 2000). Recent research also supports the importance of speed of response in service recovery (Edvardsson et al., 2011; Mostafa et al., 2014). Importantly, however, all of these studies focus on response speed or timeliness in offline settings.

Increasingly, studies have examined the role of response time in cyberspace. For example, Sparks and Bradley (2014) report that most hotels examined in their study respond to online consumer reviews within one to three days. Min et al. (2015) find that the speed with which the hotel responds to an online complaint does not influence the participants' rating of the response. In contrast, Sparks et al. (2016) experimentally demonstrate that a timely response to a negative online review significantly improves consumer inferences of trustworthiness and concern for customers. Furthermore, Verhoef et al. (2002) find that trust leads to performance-related outcomes such as the number of referrals. We therefore propose:

**H2.** Response timeliness is positively associated with future hotel financial performance.

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