

RESEARCH NOTE

NEW YORK CITY BED BUG CRISIS AS FRAMED BY TOURISTS ON TRIPADVISOR

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In New York City (NYC), one of the world's top tourism destinations, bed bugs have reemerged as a challenge to the hospitality industry regardless of a hotel's star rating, location, ranking, or other. Given this growing tourism and hospitality management problem, the purpose of this study was to understand how the NYC bed bug crisis was framed on social media by travelers and how it impacted tourist experiences of NYC. Four general narrative frames and 14 subframes were identified in the analysis and the findings confirm that bed bugs have become a real and growing concern for tourists, and they are using social media to report their bed bug experiences. The significance and implications for hotel and destination management are discussed.

Key words: Bed bugs; Crisis communication; Hotels; Social media; New York City

Introduction

Tourism is one of the most susceptible and vulnerable industries to crisis in the world (Santana, 2004; Sönmez, Apostopolopoulos, & Tarlow, 1999). Tourism crisis can be understood as any occurrence that can threaten normal operations. Such an occurrence can damage a destination's or attraction's reputation and negatively affect a consumer's perception of the destination (Santana, 2004). Concomitantly, as the number of crises in recent years has risen, so too has a growing body of literature surrounding this topic (Zeng & Gerritsen, 2014).

One area that has been of interest is the use and impact of social media in managing tourism crises (Zeng & Gerritsen, 2014). Tourism firms now use social media to disseminate crisis-related information, engage different stakeholders in crisis management practices, as well as communicate with customers. In addition, tourists are prone to use social media to acquire information, discuss crisis events, and share experiences in times of crisis (Sigala, 2011).

In particular, this study is concerned with the growing infestation of bed bugs in the hotel sector in the US and how this crisis is being communicated on social media sites. Attention to this area

was drawn from the fact that the bed bug infestation is one of the most publicized crises that the hospitality industry has faced in recent years (Anderson & Leffer, 2008; De Lollis, 2010; Doggett, 2013). In 2010, the outbreak of bed bugs in New York City (NYC) resulted in disastrous financial and image-related impacts for the hotel sector (New York City Bed Bug Advisory Board, 2010). Through content analysis of online hotel reviews, this study will examine the discourse of crisis communication found on social media sites, as well as tourists' concerns over time.

Literature Review

Tourism Crisis Management and Social Media

The rise in health-related crises globally has resulted in a growing concern for one's health and safety while traveling (Kozak, Crotts, & Law, 2007). As health-related crises rise in incidence, the tourism industry is in a particularly vulnerable situation. Given that tourists tend to avoid risky situations and modify travel behaviors to minimize risks (Sönmez et al., 1999), heightened attention to bed bug infestations has the potential to have long-term financial impacts to the accommodation sector. Thus, it behooves the tourism industry to monitor and prepare for health-related crises of all types on a regular basis.

Recently, scholars have indicated the importance and significance of social media in the crisis communication process (Sigala, 2011). Unlike traditional crisis communication, where messages traditionally originate from authority figures and reach the public through one-way communication, social media provides the public with "opportunities for interaction with key decision makers and for acquiring the information necessary to make informed judgments about a risk issue" (Sellnow, Ulmer, Seeger, & Littlefield, 2009, p. 9). With more than half of the US population reporting that they would use social media to receive and share crisis-related information during times of crisis, the need to better understand the role of social media in the crisis communication process is highly relevant (American Red Cross, 2012).

Social media allows individuals to share their personal experiences as well as to communicate their concerns, fears, opinions, and responses with a large audience (Heverin & Zach, 2012). User-generated

content (UGC) in the form of online reviews have exploded in the last decade. In addition, research suggests that travelers perceive UGC to be more up to date, reliable, and trustworthy (Gretzel & Yoo, 2008). In times of crisis, a high volume of UGC can attract a large amount of public attention; the valence of online reviews can further influence the audience (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001; Vermeulen & Seegers, 2009). A positive review can strengthen tourist' confidence in the travel experience (Vermeulen & Seegers, 2009), while negative reviews can evoke an emotional response, shape unfavorable attitudes, produce contradictory images, and lead to an unwillingness to pay (Vermeulen & Seegers, 2009). When information is continuously negative, the majority will avoid risky situations (Baumeister et al., 2001).

The Bed Bug Crisis in New York City

NYC is one of the top tourism destinations in the world. In 2011, more than 50 million domestic and foreign travelers visited NYC, and the average hotel occupancy rate was 85%—the highest in the nation (NYC & Company, 2013). The emergence of bed bug infestations in NYC hotels has resulted in a growing health crisis that has challenged hoteliers within NYC as well as nationally (New York City Bed Bug Advisory Board, 2010). NYC has been tracking bed bugs since 2004. In the years between 2004 and 2011, the number of bed bug complaints increased from 537 to 13,140, and the number of bed bug violations increased from 82 to 4,808 (New York City Bed Bug Advisory Board, 2010). A recent community health survey found that 1 in 15 NYC residents have had a problem with bed bugs in their homes (NYC Department of Health and Mental Hygiene, 2009). Unfortunately, NYC hotels are facing similar problems. Due to an increasingly mobile traveler, hotels are particularly vulnerable to bed bug infestations (NYC Department of Health and Mental Hygiene, 2013). These tiny little insects are transported in luggage, handbags, and on clothing; and they can quickly hide in furniture, bedding, behind headboards, and other places (Harlan, 2006). Most people do not realize they are transporting bed bugs or that they are sleeping in an infested hotel room until they are attacked.

Given the scale and scope of the NYC tourism and hospitality industry, bed bug infestations can

produce profound impacts. On the supply side, bed bug infestations can lead to economic losses as well as litigation. One such case of litigation was the case of the NYC Waldorf-Astoria Hotel, which was sued by multiple guests claiming they suffered bed bug attacks during their stay (De Lollis, 2011). Direct costs to the hotel included fixes to rooms and mitigating reputation-related damage (e.g., targeted advertising programs). On the tourism demand side, concerns regarding bed bugs can lead to an increased perception of risk by tourists, which can result in altered traveler decision making and ultimately hotel room cancellations (Kozak et al., 2007). In fact, in 2010, 11% of all US hotel reviews on TripAdvisor made reference to or reported encounters with bed bugs (De Lollis, 2010).

Despite the abundance of references to bed bugs on UGC sites, little is known about how tourists' perceive and communicate their experiences with bed bugs when traveling. The majority of existing studies assume a natural or medical sciences perspective, while very few articles in the travel and tourism literature address the bed bug crisis (Goddard & De Shazo, 2009). Thus, the purpose of this study was to understand how the NYC bed bug crisis was communicated by travelers on social media. The following research questions were addressed:

1. How prevalent is the bed bug issue on travel-related social media sites?
 - a) How many bed bug-related reviews were posted on travel-related social media sites by year?
 - b) What types of hotels were involved in the bed bug-related reviews?
2. How is the NYC bed bug crisis communicated by tourists on travel-related social media sites?
 - a) What themes emerge when examining messages by tourists regarding the NYC bed bug crisis?
 - b) Is there any differences between the uses of themes by the valence of the review?

Method

Study Site

TripAdvisor was selected as the main study site because it is a typical social media site that combines social network, virtual communities, and

travel blogs. Also, it has been extensively used by both tourists and hotels as a communication channel. The site contains more than 100 million online travel reviews, and is used by over 50,000 hotels to communicate with their guests. TripAdvisor allows travelers to search a hotel by its location, price, star rating, name, and brand. For each destination, travelers can browse a ranked list of hotels and access its reviews. Hotel guests are encouraged to leave feedback of their stay: they can share by posting a review, and rate the service quality of a hotel using a five-star rating scale varying from 1 = *very dissatisfied* to 5 = *very satisfied*.

Sample

A search for NYC lodging reviews on TripAdvisor was completed for the time period 2000–2012 (2000 being TripAdvisor's first year of operation). The key words "bedbug (bed bug/bedbugs)" was used to narrow the search and this produced 1,089 cases. The cases were filtered to include hotel reviews and to exclude forum topic postings and specialty lodging reviews (e.g., bed and breakfasts, hostels, campgrounds, etc.). A total of 532 reviews were subsequently downloaded for analysis. Additional information for each review was collected, including posting time, rating, helpfulness rating, and hotel characteristics (e.g., ownership, class).

Data Analysis

The unit of analysis for this study was one TripAdvisor review concerning bed bugs in NYC hotels. Both qualitative and quantitative content analyses were used and such a combination can help researchers unveil "the diffuse nature of frames and their openness to varied interpretations" (Hertog & McLeod, 2001, p. 153). Following a previously established coding scheme (Qu, Wu, & Wang, 2009), two independent researchers analyzed the data set ($N = 532$) to identify a set of salient themes in the reviews. To assess reliability, intercoder reliability was conducted using Krippendorff's alpha (α) calculations. One researcher independently coded each of the 532 reviews while the second coder independently coded a randomly selected sample ($n = 102$, or 19.17%). As indicated in Table 1, the value of α varied from 0.81 to 1, all of which

Table 1

| Frame/Theme | Definition | Krippendorff's Alpha | | Total (N = 532) | | Positive Review (N = 218) | | Negative Review (N = 314) | | χ^2 |
|-----------------------------------|---|----------------------|-------|-----------------|------|---------------------------|------|---------------------------|----------|----------|
| | | N | % | N | % | N | % | N | % | |
| Bed bug experiences | Tourists accounts of their bed bug experiences in their online reviews | 532 | 100.0 | 218 | 100 | 314 | 100 | — | — | — |
| Bed bug infestation | Tourists reported their experiences as bed bug infested | 281 | 52.8 | 25 | 11.5 | 256 | 81.5 | 253.44** | 253.44** | 253.44** |
| Bed bug free | Tourists reported their experiences as bed bug free | 251 | 47.2 | 193 | 88.5 | 58 | 18.5 | 253.44** | 253.44** | 253.44** |
| Impacts | Tourists' accounts of how their bed bug experience impacted their health, hotel stay, and/or visit to the NYC | 177 | 33.3 | 11 | 5.0 | 166 | 52.9 | 132.53** | 132.53** | 132.53** |
| Affective responses | | | | | | | | | | |
| Anxiety | Tourists' emotional responses to bed bugs in NYC | 281 | 52.8 | 98 | 45.0 | 183 | 58.3 | 15.81** | 15.81** | 15.81** |
| Relief | Expression of anxiety for worrying about bed bug encounters | 150 | 53.4 | 72 | 33.0 | 78 | 24.8 | 4.26* | 4.26* | 4.26* |
| Anger | Expression of anger for their bed bug experiences | 92 | 32.7 | 78 | 35.8 | 14 | 4.5 | 88.25** | 88.25** | 88.25** |
| | Expression of relief for having avoided or survived a bed bug attack | 61 | 21.7 | 3 | 1.4 | 58 | 18.5 | — | — | — |
| Behavioral responses | | | | | | | | | | |
| Preventive action | Tourists' behavioral responses to bed bugs in NYC | 269 | 50.6 | 106 | 48.6 | 157 | 50.0 | 8.41 | 8.41 | 8.41 |
| Report the bed bug issue | Report the bedbug infestation to the hotel, health department, or related officials | 106 | 39.4 | 68 | 31.2 | 38 | 12.1 | 44.23** | 44.23** | 44.23** |
| Information search | Take actions to prevent a bed bug attack upon arriving at the hotel | 105 | 39.0 | 13 | 6.0 | 92 | 29.3 | 29.39** | 29.39** | 29.39** |
| Seek compensation | Search information about how to prevent, identify, and treat bed bug bites | 95 | 35.3 | 58 | 26.6 | 37 | 11.8 | 19.27** | 19.27** | 19.27** |
| Adjust itinerary | Request compensation from the hotel for the bedbug attack | 39 | 14.5 | 3 | 1.4 | 36 | 11.5 | — | — | — |
| Seek health services | Change itinerary in order to get rid of bed bugs | 26 | 9.6 | 4 | 1.8 | 22 | 7.0 | — | — | — |
| Hotel response perceptions | Seek health services for bed bug bites | 12 | 4.5 | 0 | 0.0 | 12 | 3.8 | — | — | — |
| Attitudes | How tourists perceived the hotel's response to their concerns and complaints about bed bugs | 148 | 27.8 | 26 | 11.9 | 122 | 38.9 | 46.46** | 46.46** | 46.46** |
| Actions | What actions, if any, the hotel took to address a real or perceived bed bug crisis | 125 | 82.8 | 19 | 8.7 | 106 | 33.8 | 44.89** | 44.89** | 44.89** |
| | The hotel staff's attitudes after reporting their concern and/or experience with bed bugs in their room | 92 | 60.9 | 16 | 24.2 | 76 | 7.3 | 25.89** | 25.89** | 25.89** |

Tests of significance were not run when cell sizes were five or less.

* $p < 0.05$, ** $p < 0.01$.

meet the analysis standards of 80% or higher (Krippendorff, 2004).

Results and Discussion

Sample Characteristics

A total of 532 reviews were included for the analysis. Nearly half of the reviews provided positive feedback—23% ($n = 122$) of them were four-star reviews and 18% ($n = 94$) of them were five-star reviews. Half of them were negative reviews, where 34% ($n = 181$) were one-star reviews, and 16% ($n = 85$) of them were two-star reviews. Only 9% ($n = 48$) of them were three-star reviews.

Prevalence of Bed Bug Reviews on TripAdvisor

The first set of research questions was concerned with the prevalence of bed bug reviews on TripAdvisor. When distributing the messages by year, a dramatic increase was evident in the number of NYC hotel reviews that reference bed bugs during the study period 2000–2012 (Fig. 1). Although these numbers may partly reflect the increased use of TripAdvisor for sharing reviews

since its launch in 2000, the overall trend was congruent with the rise in bed bug complaints and violations nationally during a similar time period. This also indicated that bed bug-related issues became a growing concern for tourists in NYC during that time. Despite one case that was reported in 2002, the majority of the reviews were posted since 2003, in which a significant increase in media coverage surrounding bed bugs was also observed (Anderson & Leffer, 2008). Interestingly, the number of references to bed bugs was highest during the time period of 2010–2011, which is when the NYC government officially announced there was in fact a bed bug epidemic in NYC (West, 2010).

Among the entire sample of bed bug reviews, a total of 186 properties were mentioned, which represented 43% of all the listed hotels. The majority of these hotels (62.4%, $n = 116$) were independent hotels, and the rest of them (37.6%, $n = 70$) were operated by chains. Nearly 4 in 5 of the analyzed properties (80.1%, $n = 149$) were hotels of a three-star or above rating, and the rest of them were either one- or two-star hotels (12.4%, $n = 23$), or unclassified (8.1%, $n = 14$).

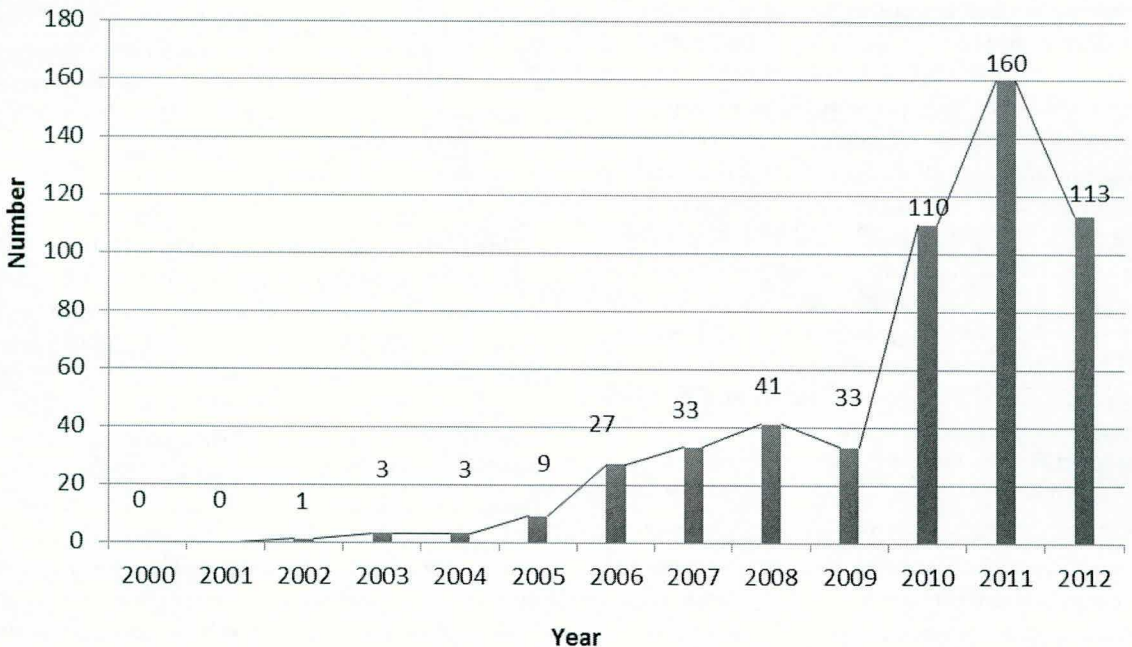


Figure 1. Number of bed bug reviews by year.

Themes

The second set of research questions attempted to identify the dominant themes that arose from tourist's reviews regarding their experiences and concerns with bed bugs. Four themes were identified: bed bug experiences, affective responses, behavioral responses, and hotel responses.

Bed Bug Experiences. The first theme refers to tourist accounts of their bed bug experiences. This theme was observed in 100% of the reviews but its primacy was expected because of the case search and the inclusion methodology. Tourists complained that attacked by bed bugs negatively impacted their visit to NYC because of the suffering from bites and the inconvenience of having to move rooms or hotels. But not all tourists reported negative experiences. In contrast, some indicated (47.2%, $n = 251$) that the hotel was bed bug free despite media reports, online reviews, or other sources. This implies that many tourists were aware of the problem before arriving in NYC, and were checking the hotel room and their bodies regularly.

Affective Responses. More than half of the reviews (52.8%, $n = 281$) contained evidence of an affective response, such as anxiety, anger, and relief. Because anxiety is an affective manifestation of perceived risk, and that there exists close relationship between anxiety, tourist safety perceptions, and intention to travel (Reisinger & Mavando, 2005), it comes as little surprise that these reviews reported anxiety about bed bugs before, during, or after their NYC stay. Tourists who experienced bed bug attacks also expressed their anger, and sometimes associated with feelings of disgust, humiliation, disappointment, suffering, and stress. Interestingly, some of the reviews contained expressions of relief for having avoided or survived a bed bug attack, as well as gratitude about how the hotel handled the bed bug situation.

Behavior Responses. The analysis confirmed a travel and tourism-specific behavioral response to the bed bug crisis (50.6%, $n = 269$). Some guests tended to prevent a bed bug attack upon arriving at the hotel (e.g., checking the bedding and furniture,

inspecting the room, and spraying pesticides). Once attacked, some reported the bed bug attack to the hotel management, the NYC Health Department, or the Better Business Bureau and sought compensation; others either sought health services for bed bug bites at the hospital, pharmacy, or local clinic or directly changed their travel itinerary by departing earlier or changing hotels.

Hotel Responses. More than one quarter (27.8%, $n = 148$) of the reviews mentioned hotels' responses—both attitude and actions. The majority commented on the attitude of the hotel staff. Guests expected the staff to be friendly and empathetic when addressing their concerns/complaints; however, that was not always what they received. Also, these reviews reported what actions, if any, the hotel took to address a real or perceived bed bug crisis.

Differences in Themes Between Positive and Negative Reviews

A series of chi-square tests was employed to examine differences in the themes that emerged in either positive or negative reviews. Behavioral responses were commonly discussed in these reviews, but in negative reviews tourists were more likely to report their encounters with bed bugs in a hotel room ($\chi^2 = 253.44$, $p < 0.01$), express affective responses ($\chi^2 = 15.81$, $p < 0.01$), and comment on the hotel's responses towards the issue ($\chi^2 = 46.46$, $p < 0.05$).

Conclusions

Maintaining an exemplary reputation for health and safety is of paramount importance for hotel managers. Social media and crisis communications are inextricably linked together. Popular topics on social media can have profound impacts on people's attitudes and subsequent behaviors, particularly related to travel decision making (Gretzel & Yoo, 2008). Thus, understanding the content of these online reviews surrounding a crisis issue is not only important for crisis communication, but also for hoteliers to mitigate negative outcomes that are associated with a crisis. The primary finding in this study confirmed that bed bugs became a main concern for guests who visited NYC, regardless

of a hotel's star rating and ownership. However, not all the comments surrounding bed bugs were associated with dissatisfaction. The evaluation of the hotel varied by situation, whereby tourists who had been attacked by bed bugs tended to express strong emotional responses, while those who had not been attacked tended to be less negative in their comments.

Online reviews have the potential to affect visitors' revisit intentions and ultimately hotel and destination revenues. The inclusion of social media in present day crisis management and specifically a crisis communications strategy is absolutely imperative for hoteliers. It is therefore recommended that hotels should make provisions for monitoring and responding to unsolicited feedback on social media sites (messages on UGC) when developing or updating a crisis management plan or, specifically, a bed bug management plan.

This study is delimited to NYC hotel guests that posted bed bug reviews on TripAdvisor between the dates of February 1, 2000 to December 31, 2012. It is noted that TripAdvisor has the right to remove negative reviews as a hotel requests; thus, the actual number of the complaints or concerns surrounding bed bugs may be greater than what appears. Both the size of the sample and the use of descriptive analysis may be a limitation in this study. A comprehensive sample with larger size and advanced statistics is needed to explore the underlying factors that determine tourists' perceptions and behaviors within a bed bug crisis situation in future studies.

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