

Impact of the Length of Stay at Hotels on Online Reviews

Abstract

Purpose - The length of stay is of major importance from the perspective of the management of tourist destinations. As tourists heavily rely on the online reviews of other travelers as a primary information source, this study empirically examined how the length of stay can influence the online reviews for hotels, with special emphasis on the textual review content.

Design/methodology/approach - We analyzed online review data collected from Booking.com by employing the Linguistic Inquiry and Word Count program to operationalize review depth, analytical thinking, and the authenticity reflected in customer reviews. Based on the analyzed data, we used a series of regression analyses to understand the impacts of the length of stay on online reviews.

Findings – Our analysis found that a longer stay at a hotel causes consumers to be more likely to post online reviews that not only include a numerical rating as well as written content but also lengthier and more detailed descriptions of their hotel experiences. Further analysis found that the length of stay at hotels causes systematic differences in the linguistic attributes of the review content. Specifically, consumers who stay longer tend to write reviews with more analytical information, resulting in consumers perceiving the online reviews as more authentic.

Implications - Although the length of stay has been considered a significant issue in tourism, studies examining the impact of different lengths of stay on consumers' post-purchase behaviors are limited. In this light, our findings demonstrate how the length of stay can change the linguistic attributes of online reviews. It expands the body of knowledge of the length of stay in tourism.

Originality – This research represents the first attempt to empirically examine and reveal how the different length of stay at a hotel systemically influences consumer review-posting behaviors.

Keywords: Online Review, Length of Stay, Review Content, Analytic Information, Authenticity, Review-posting Behavior

1. Introduction

Length of stay (LoS) is of major importance for the management of tourist destinations. A longer stay is more profitable for tourist destinations (Barros *et al.*, 2010; Barros and Machado, 2010; Lee *et al.*, 2020; Weatherford, 1995), and their strategic development influences consumers' revisit intentions (Wang *et al.* 2018). Numerous studies have examined how the LoS directly contributes to profitability (Weatherford, 1995). In addition, previous studies have attempted to reveal the determinants of LoS to provide useful insights for practitioners to formulate effective target marketing strategies (Hateftabar and Chapuis, 2020; Hateftabar, 2021). As a result, various socio-economic factors were found to be closely related to the LoS. Although a previous study suggested the LoS might influence online reviews detailing the experiences of consumers (Mariani *et al.*, 2019), to the best of our knowledge, no previous studies have explored the LoS in this regard. If the different LoS systematically influences review-posting behaviors of consumers about their consumption experiences, it would provide important insights for tourist destinations as online reviews are found to have significant influences on prospective customers.

Online reviews are an easily accessible information source available to tourists considering travel destinations (Agnihotri and Bhattacharya, 2016; Godes and Mayzlin, 2009). Information acquisition is particularly critical in the tourism industry because, due to its nature, consumers cannot know in advance about tourism destinations before they personally experience them (Klein, 1998). Hence, tourists heavily rely on the online reviews of other travelers as a primary information source (Kwok *et al.*, 2017; Narangajavana-Kaosiri *et al.*, 2019). Previous studies have empirically demonstrated that online reviews can influence the decision-making process of

prospective consumers (Bilgihan *et al.*, 2016; Kostyra *et al.*, 2016; Xu and Zhang, 2018; Zhao *et al.*, 2019).

Our study aims to fill the gap in the existing literature regarding the LoS and review-posting behaviors by showing the systematic influences the different LoS has on consumers when they post online reviews about their experiences. We empirically examined how LoS can influence online reviews of hotels, with special emphasis on textual review content. In doing so, we propose that the level of consumer familiarity stemming from different LoS is a critical factor in making systematic changes to consumer review-posting. That is, familiarity is dependent upon the extent of knowledge and experience they have with a product or service, accumulated over time (Alba and Hutchinson, 1987); thus, customers with different levels of familiarity have different frames of reference for evaluations in their consumption situations (Söderlund, 2002). Based on this argument, we developed a major hypothesis.

We analyzed field data from a leading online travel agency (Booking.com) and investigated how the LoS influences the volume and length of review content. Many online reviews are posted with only review ratings and no personalized text. Our analysis showed that customers who stay longer are more likely to post online reviews that include not only a rating and written content but also lengthier descriptions of their hotel experiences. Further analysis found that the LoS at hotels causes systematic differences in the linguistic attributes of the review contents. Specifically, consumers who stay longer tend to write reviews with more analytical information. The level of analytical information refers to the degree of analytic, logical, and consistent thinking in the information (Pennebaker *et al.*, 2014; Pennebaker *et al.*, 2015; Xu and Zhang, 2018). Moreover, the high level of analytical information in the reviews results in prospective consumers perceiving those online reviews as “more authentic.”

The findings of our study shed light on the new research stream investigating the relationship between the LoS and review-posting behaviors, and this study is the first to examine it empirically. Another contribution of our research is that it expands the range of existing knowledge regarding review authenticity. It is important and meaningful because of the increasing relevance of authentic reviews in overcoming consumers' information overload (e.g., Banerjee *et al.*, 2017; Kim and Kim, 2018; Kim and Kim, 2020). Additionally, our findings have practical implications for practitioners in the tourism industry since the LoS, once considered important only for RM purposes, can lead consumers to post more helpful online reviews regarding their experiences.

2. Literature Review and Theoretical Background

2.1. LoS in Tourism

LoS is important in tourism management because a longer stay is directly associated with higher revenues and higher profitability as LoS can maximize operational profits and reduce fixed costs (Barros and Machado, 2010; Barros *et al.*, 2010). Moreover, LoS influences a consumer's destination planning. For example, Wang *et al.* (2018) found that LoS has a U-shaped connection with consumers' revisit intentions. In particular, visitors who stay for more than five days tend to revisit the same place compared with those who stay shorter, which has implications at the strategic level of tourist destinations.

Previous studies have attempted to ascertain the determinants of the LoS of tourists to provide useful insight into how to increase the LoS effectively. Practitioners need to understand the determinants of LoS to develop effective target marketing strategies (Hateftabar and Chapuis,

2020; Hateftabar, 2021). For example, Wang *et al.* (2018) revealed the determinants of LoS in the context of a gaming destination, Macao. They found that the information source choice for the trip, repetition of the trip, and transportation mode are significant predictors of tourists' LoS. In particular, tourists relying on the Internet, word-of-mouth, and magazines stay longer. Additionally, repeat visitors and those who traveled by air were found to stay longer. Barros *et al.* (2010) also found that the LoS regarding Algarve golf tourism is positively associated with the nationality, age, education, the delay time of individual games, the primary motivation for the trip, hotel type, events at the destination, local climate, and staff hospitality. Similarly, Martinez-Garcia and Raya (2008) examined the determinants of LoS for budget tourists in Spain; their study found that nationality, age, education level, education type, accommodation type, season, and geographical area are positively associated with the LoS.

Previous studies also suggested that different LoS can influence consumers' decision-making (Mariani *et al.*, 2019; Wang *et al.*, 2018); however, very limited studies have attempted to investigate the effect of LoS on consumers' post-purchase behaviors (e.g., Wang *et al.*, 2018). As a part of post-purchase behaviors, posting online reviews is considered to have a significant influence on prospective consumers (Chatterjee, 2020; Fang *et al.*, 2016; Zhao *et al.*, 2019) because online reviews are easily accessible information that can reduce the perceived risk involved in travel decision-making (Agnihotri and Bhattacharya, 2016; Godes and Mayzlin, 2009). However, despite the significance of online reviews, no prior study has empirically examined the systematic impacts of the LoS on online reviews. We propose that the different levels of customer familiarity with a hotel stemming from different LoS are a critical factor that creates a systematic difference in online reviews. LoS and customer familiarity are discussed in the following section.

2.2. LoS and Customer Familiarity

Familiarity is defined as a consumer's knowledge construct (Johnson and Russo, 1984; Park *et al.*, 1994). Baloglu (2001) suggested that familiarity with a tourist destination is a combination of previous experience and the amount of information. Familiarity with a tourist destination influences tourist behavior in many ways (Toyama and Yamada, 2012). According to Alba and Hutchinson (1987), familiarity leads to better cognitive structure through increased knowledge about the object, meaning that different levels of familiarity lead customers to have a different frame of reference for evaluations in their consumption situations (Söderlund, 2002) as customers have more knowledge and tend to be more critical when they evaluate products and services (Park *et al.*, 2019). Lin (2013) also added that customer familiarity is a critical factor in product and service evaluations. The significant influence of familiarity with products and services on consumer behavior has been evidenced in many prior studies. For example, Jang (2021) examined the effect of green communicative servicescape on consumer attachment and loyalty in the context of a coffee shop. The study found that the impact was significantly stronger for consumers with a high level of familiarity. Tam (2008) found that the impact of the perceived performance of services varies depending on the level of customer familiarity.

We propose that the LoS is directly related to the level of familiarity a consumer has with a hotel, as familiarity depends on the extent of experience with a product or service accumulated over time (Alba and Hutchinson, 1987). Therefore, we expect that consumers with a longer stay have more knowledge about the hotel, which leads them to have a higher familiarity level with a hotel than those with short stays. Therefore, consumers with longer stays are likely to develop different cognitive structures to evaluate their hotel experiences. Based on this argument,

different levels of familiarity are expected to play a critical role in making systematic changes when consumers write online reviews, as shown in Figure 1.

<Figure 1 About Here>

3. Hypothesis Development

3.1. LoS at Hotels and the Volume and Length of Review Contents

As online customer reviews consist of quantitative and qualitative aspects, consumers consider both aspects when deciding (Chevalier and Mayzlin, 2006; Kim *et al.*, 2020; Schlosser, 2011). However, many online reviews are posted with only review ratings or short and uninformative textual content because posting lengthy online reviews with much informative content depends on the intensity of the effort a review poster is willing to make (Burtch *et al.*, 2018). Researchers have tried to reveal what motivates consumers to put such efforts into sharing their consumption experiences. Drawing on personal motivational theory (Deci and Ryan 1980), previous studies have found that information sharing behaviors in the form of online reviews can be both intrinsically and extrinsically motivated. The importance of intrinsic motivation in consumers posting lengthy reviews that convey meaningful information has been highlighted (Burch *et al.*, 2018). Intrinsic motivation refers to doing certain behaviors for its own sake, whereas extrinsic motivation pertains to certain behaviors in response to something apart from its own sake (Deci and Ryan, 1980; Lee *et al.* 2006). Although extrinsic motivation such as financial rewards can help motivate consumers to post online reviews, the aforementioned study did not positively influence the length of reviews because financial rewards do not affect the intensity of effort in evaluating products or the composition of a review (Stephen *et al.*, 2012).

In contrast, knowledge self-efficacy is an important intrinsic motivation and antecedent required for consumers to post helpful online reviews (Kankanhalli *et al.*, 2005; Lee *et al.*, 2006). Knowledge self-efficacy refers to confidence in shared knowledge (Lee *et al.* 2006). People tend to be willing to provide more useful information to others when they are confident in their knowledge (Constant *et al.*, 1996). On the contrary, insufficient knowledge self-efficacy makes consumers less willing to share their knowledge within the online environment (Kankanhalli *et al.*, 2005). An exploratory study by Lee *et al.* (2006) aimed to understand consumer motivations for sharing knowledge online and found that lack of knowledge self-efficacy is the most cited reason for not sharing knowledge online.

We expect that familiarity with a hotel is directly related to the level of knowledge self-efficacy about the hotel because familiarity is dependent upon the extent of experience they have with a product or service accumulated over time (Alba and Hutchinson, 1987). A high level of familiarity with a certain hotel, stemming from a longer stay, will likely allow customers to achieve a higher level of knowledge self-efficacy regarding their hotel experiences. Thus, consumers with longer stays at hotels are likely to be more motivated to write textual review content along with ratings when they post online reviews on their experiences compared with those with shorter stays. In addition, when consumers with longer stays write textual reviews, they tend to include more useful and detailed information for other prospective consumers than those with shorter stays, which is likely to lead them to post lengthier textual review content. Therefore, the following is hypothesized:

H1: The length of stay at a hotel is positively associated with (a) the existence of review text with online reviews and (b) the length of those reviews.

3.2. The Impact of LoS at Hotels on Textual Review Contents

In addition to the existence and length of review content, LoS is expected to influence the linguistic styles of the review content, as the different levels of familiarity are related to psychological distance. Psychological distance refers to a subjective experience in which something is close or far away from the self, and thus, it is egocentric (Trope and Liberman, 2010). It has been suggested to significantly influence the way consumers process information (Edwards *et al.*, 2009).

Construal level theory (CLT) explains how psychological distance can influence the way people construe events. The theory predicts that the greater the psychological distance, the more likely events will be construed at a higher level (Trope *et al.*, 2007). Meaning that psychologically distant events are represented by more abstract, general, and decontextualized features (high-level construal) because the process of abstraction from high-level construals involves a loss of specific and incidental information about an event (Trope and Liberman, 2010). However, CLT suggests that when the psychological distance is close, the events are represented by more concrete, contextual, and incidental details (low-level construal).

Previous studies have proposed that familiarity is a critical factor in explaining psychological distance because people feel more psychologically distant as their level of knowledge decreases (Edwards *et al.*, 2009). The relationship between familiarity with events and the perception of psychological distance has been demonstrated in several studies (Centeno, 2018; Chapin, 2001; Edwards *et al.*, 2009; Förster, 2009). For example, Chapin (2001) suggested that psychological distance is elicited or attenuated based on a consumer's judgment about familiarity with others. Edwards *et al.* (2009) showed that being less familiar with a retailer elicits a greater sense of psychological distance for consumers than when one is more familiar.

Based on the literature, different levels of consumer familiarity with various hotel experiences are likely to lead to different consumers evaluating the same hotel differently. We can expect that consumers who stay longer are likely to feel less psychologically distanced from the hotel because of their higher level of familiarity. By drawing on CLT, experiences are represented by more concrete and detailed-oriented thinking. Furthermore, Förster (2009) showed that familiar objects bolster detail-oriented thinking; participants in his study used more abstract thinking for items presented less frequently. That is, consumers with high levels of familiarity due to longer stay are likely to write reviews about their experiences with more specific, concrete, and detailed information. The specific and detailed information is expected to lead other prospective consumers to perceive that the information in the review content is more analytical than the review content written by those with shorter stays. According to previous studies, the degree of analytical information is closely related to the concreteness and specificity of information (Pennebaker *et al.*, 2014; Pennebaker *et al.*, 2015; Xu and Zhang, 2018). Thus, we hypothesize the following.

H2: Online review content written by consumers with longer stays is perceived to contain more analytical information than online review content written by those with shorter stays.

Authentic online reviews are original, credible, and sincere (Napoli *et al.*, 2014). The perceived authenticity of online reviews is defined as the prospective traveler's perception of the sincerity of online reviews generated by other travelers sharing real experiences about tourist destinations (Ramkissoon and Uysal, 2011). Hence, the perceived authenticity of online reviews

is based on other prospective travelers' subjective evaluation (Kim and Kim, 2020; Napoli *et al.*, 2014).

Based on the existing literature, we expect that the linguistic attributes of online reviews are closely associated with the perceived authenticity of online reviews. Banerjee *et al.* (2017) examined the characteristics of online review authenticity using linguistic analysis of review contents. They found that the specificity of information in review content is an important determinant of the perceived online review authenticity. Consumers expect online reviews to be about real experiences at tourist destinations, and online reviews that accurately recount real experiences are highly likely to contain more detailed and specific information. This is supported by information manipulation theory (McCornack, 1992), which predicts that authentic information tends to be more specific than deceptive information. More recently, Pérez and Liu (2020) also showed the positive impact of information specificity on the perceived authenticity of information by applying the heuristic-systematic model.

Information specificity, in the context of online reviews, refers to the amount of detail contained within an online review, and it is conceptualized as three sub-dimensions: informativeness, perceptual details, and contextual details (Banerjee *et al.*, 2017). In this regard, online reviews displaying highly analytic information are expected to contain a high level of information specificity because the consumer experiences described analytically are likely to be more concrete and detailed. We expect this to lead consumers to perceive a higher level of authenticity when an online review is composed of analytical review content. Thus, we hypothesize the following:

H3: The level of analytic information in the textual content of an online review is positively associated with the perceived authenticity of the online review.

4. Research Methodology

4.1 Data Description

We collected online review data from the travel website, Booking.com. To collect the data, we used Visual Basic.NET, a Microsoft object-oriented programming language, and scraped HTML and XML pages of the travel website. The reason why we chose Booking.com for the data source is that Booking.com has worldwide popularity¹, and much of prior literature on online review generation used online reviews from Booking.com to conduct empirical analyses (Moreno-Perdigón *et al.*, 2021).

Specifically, we collected customer reviews for hotels in London because London is one of the top metropolitan cities based on foreign visitors². The collected data consists of 367,864 online reviews. The length of stay at a given hotel varied, ranging from 1 day to 10 nights. Among those reviews, 367,232 (99.82%) were posted by customers who stayed for seven or fewer nights. The post dates of the reviews range from January 2014 to April 2016. We use this dataset for the empirical analyses in 4.3 (Empirical Results). An example of an online hotel review on Booking.com can be seen in Figure 2³.

¹ <https://www.booking.com/content/about.en-gb.html>

² <https://www.telegraph.co.uk/travel/destinations/europe/united-kingdom/england/london/articles/London-is-the-worlds-most-popular-capital-again/>

³ Booking.com has since changed their online review platform. Due to this, we have sourced a screenshot of the relevant version from the following website: <http://www.g4hteam.com/blog>

<Figure 2 About Here>

As we can see in Figure 2, each review provides each reviewer's evaluation of hotel services by way of a review rating, as well as textual content. The textual content consists of positive ("pros") or negative ("cons") aspects of the hotel's services. Review posters can only leave a review rating without the textual content or one aspect (either positive or negative aspect) with a review rating. Each review also includes the review date, the nationality of the reviewer, the purpose of the trip (whether for leisure or business), with whom the reviewer took the trip, which room-type the reviewer stayed in at the hotel, whether the review was posted via a mobile device or not, and how many nights the reviewer stayed at the hotel, which is the main focus of this study.

To explore the effects of the length of stay on the textual characteristics reflected in customer reviews, we employed the Linguistic Inquiry and Word Count (LIWC) program to analyze textual characteristics such as review depth, analytical thinking, and authenticity. The LIWC is a widely used software for identifying the underlying characteristics expressed in written content, such as sentiment or mood (Pennebaker *et al.*, 2001). The hospitality and tourism research fields have used this program to aid scholars in disambiguating the sentiment of online reviews (Liu *et al.*, 2019; Ma *et al.*, 2018). It can compute how prevalent different word categories are within a body of text; this is done by calculating the percentage of individual words that match those found in pre-defined keyword dictionaries (Pennebaker *et al.*, 2007). Using word count as a basis, LIWC can be utilized to calculate what the proportion of the matched words is (# of matched words/# of total words). We specifically used two LIWC dictionaries: "analytical thinking" and "authenticity." To measure review depth, we use the word count processed by the LIWC.

4.2 Key Variables

4.2.1 Independent Variables

Length of Stay: We utilize the number of nights, as is indicated by Figure 2. Table I shows the frequency table of the length of stay. As is clear from Table I, most review posters stayed at hotels for less than three nights.

<Table I About Here>

4.2.2 Dependent Variables

In this study, we consider four different dependent variables to examine the impacts of the length of stay on online review generation. These four variables include the existence of a review, the length of a review, the degree of observable analytical thinking, and review authenticity. We consider these four variables from the two perspectives: information volume and information characteristics. The first two represent information volume (information quantity) reflected in textual comments, while the other two show information characteristics of online reviews, respectively.

Length of review: Online reviews can act as a useful information source for undecided consumers interested in learning about a specific product or service through the opinions of their peers (Dellarocas, 2003). Unfortunately, online reviews for specific goods and services are sometimes limited, like many other voluntarily provided public goods (Levi *et al.*, 2012). Due to this, knowing how to encourage customers to share their experiences is very important. From this point of view, we examine whether the length of stay is associated with the intention that review posters have to post a textual comment (H1a). On the other hand, according to prior literature

(Mudambi and Schuff, 2010; Fang *et al.*, 2016), the length of review has been regarded as a signal for review depth, representing the amount of available information within the text, information quantity (Chen and Huang, 2013). Typically, consumers will provide written brief reviews, limiting their potential to aid prospective consumers looking for insight (Cao *et al.*, 2011). From this perspective, encouraging reviewers to leave lengthier reviews has important strategic implications. Through these dependent variables, we examine whether the length of stay is closely related to the amount (volume) of the information provided by review posters. Even when review posters leave textual comments, they may post only one aspect, such as “pros” (positive) or “cons” (negative), and therefore we consider the positive and negative aspects separately.

Analytical thinking: For the third dependent variable, we use the level of analytical thinking. To determine this, we process the textual comments using the LIWC. Prior literature shows that this category is based on associating the use of prepositions and articles with logical and analytical thinking (Pennebaker *et al.*, 2014).

Authenticity: As the last dependent variable, we use the perceived level of authenticity reflected in online reviews. LIWC is again used to measure it. This index is known to measure the degree of personal and self-revealing language used (Pennebaker *et al.*, 2014). According to prior literature, analytical thinking positively impacts the authenticity reflected in online reviews (Xu and Zhang, 2018). Through these two dependent variables, we examine whether the length of stay is associated with the two characteristics of the textual content. For the operationalization, we log-transformed “Analytical thinking” and “Authenticity” because of their right-skewness.

4.2.3 Control Variables

We consider the following control variables because these control variables are known to be related to diverse aspects of online review generation.

Hotel-star level: Online travel agencies assign hotel stars to differentiate the quality of hotels. In the context of online review generation, hotel-star levels are frequently used to control the impacts of the quality of hotels on online reviews (Ahn *et al.*, 2017). Booking.com assigns hotel stars ranging from 1 to 5, among which 5-star rated hotels represent the hotels with the highest quality.

Traveler type: According to prior literature, traveler types have different preferences concerning hotel selection (Wang *et al.*, 2020) and different evaluation tendencies for hotels (Banerjee and Chua, 2016) from the context of online review generation. In this study, we considered the five traveler types (couples, families, groups, friends, and solo) as another control variable by operationalizing it as dummy variables.

Purpose of trip: A prior study (Chatterjee and Mandal, 2020) found that travel goals affect online review generation in terms of review ratings. An example is how business travelers tend to leave higher review ratings than leisure travelers (Chatterjee and Mandal, 2020). In this study, we considered business and leisure travelers (dummy variables) to control the impacts of different trip types on online review generation.

Mobile channel: Mariani *et al.* (2019) found that online reviews posted via mobile devices are quite different from those posted via non-mobile devices in both features and distributions.

Considering the influences of the submission device on online review generation, we consider it a control variable.

Hotel-level heterogeneity: We controlled for hotel-level heterogeneity by employing hotel-level dummy variables. The differences in online reviews written for different hotels might be systematically different because of unobservable hotel-level characteristics. The operationalization of the variables used for this study is summarized in Table II. Table III shows the summary statistics of the main variables, and Table IV represents the correlation matrix.

<Table II About Here>

<Table III About Here>

<Table IV About Here>

4.3 Empirical Results

To test the first hypotheses, we employ logistic and negative binomial models (H1a and H1b). To confirm the second and third hypotheses, we use the linear regression models (H2 and H3).

To test H1a, we dichotomize the length of reviews. If a review poster posted a textual comment, it is coded 1, while if a review poster did not post a textual comment, it is coded 0. Therefore, the dependent variable is a binary (1 or 0). We use logistic regression analyses for the positive and negative aspects of textual comments based on Eq. (1).

$$\log\left(\frac{P(\text{Text Posting}_{ij})}{1-P(\text{Text Posting}_{ij})}\right) = \alpha_1 + \alpha_2 * \text{Length of Stay}_{ij} + \sum \gamma_l * \text{Control}_{ij}^l + \delta_j + \varepsilon_{ij}, \quad (1)$$

Regarding H1b, because the dependent variable length of review is a nonnegative count variable and the variance of the dependent variable exceeds its mean (over-dispersion, Mean=9.36, SD=12.35), it is appropriate to use the negative binomial model to correct the over-dispersion. We have the following model specification (Eq. (2)) to test H1b:

$$\text{Length of Review}_{ij} = \exp(\beta_1 + \beta_2 * \text{Length of Stay}_{ij} + \sum \theta_l * \text{Control}_{ij}^l + \delta_j + \varepsilon_{ij}), \quad (2)$$

Concerning the second (H2) and the third hypothesis (H3), we use linear regression models with the log-transformation of the dependent variable to correct the right-skewness of the variable. Equation (3) through (4) clarify the model specifications:

$$\log(\text{Analytical thinking}_{ij}) = \pi_1 + \pi_2 * \text{Length of Stay}_{ij} + \sum \vartheta_l * \text{Control}_{ij}^l + \delta_j + \varepsilon_{ij}, \quad (3)$$

$$\log(\text{Authenticity}_{ij}) = \rho_1 + \rho_2 * \log(\text{Analytical thinking}_{ij}) + \rho_3 * \text{Length of Stay}_{ij} + \sum \varphi_l * \text{Control}_{ij}^l + \delta_j + \varepsilon_{ij}, \quad (4)$$

where i represents a review poster, j is a hotel. δ_j means hotel-level heterogeneity. We use Huber-White sandwich standard errors.

4.3.1. The relationship between the LoS and the length of reviews

To estimate the coefficients of Eq. (1), we employ the maximum likelihood estimation (MLE). We include the aforementioned control variables in the logistic analyses. Table V shows the results. The two columns ((1) and (2)) show the results of logistic analyses.

The first column (1) is about text posting on the positive aspects of the review poster's stay. The second column (2) is based on the same logistic model specification for online review text posting on the negative aspects of the hotel that was visited. For the logistic results for text

posting about the positive aspects, the estimated coefficient is significantly positive ($\beta_{\text{Length_of_Stay}}=.02, p\text{-value}<.01$), meaning that review posters tend to post reviews about the positive aspect (“Pros”) of hotel services as the length of stay increases. Similar results are seen in the second column. The estimated coefficient for the negative aspects of hotel services is also significantly positive ($\beta_{\text{Length_of_Stay}}=.05, p\text{-value}<.01$). Review posters also tend to post reviews about the negative aspect (“Cons”) of hotel services as the number of nights stayed increases. From the two results, we can conclude that, as the length of stay increases, review posters are more likely to post textual comments, supporting the hypothesis (H1a)⁴.

The logistic analyses show significant goodness of fit. For the positive aspect (“Pros”) of text posting, the likelihood ratios are statistically significant ($p\text{-value}<.01$). For the negative aspect (“Cons”) of text posting, the likelihood ratios are also statistically significant ($p\text{-value}<.01$).

The fifth and sixth columns ((3) and (4)) show the empirical results of negative binomial regression analyses based on Eq. (2). We use the length (word count) of the positive aspects of online reviews as the dependent variable for the fifth column (3) and the length of the negative aspects as the dependent variable for the sixth column (4).

The estimated coefficient for the number of words about the positive aspects of hotel services is significantly positive ($\beta_{\text{Length_of_Stay}}=.03, p\text{-value}<.01$), meaning that review posters have an increased tendency to post more content about the positive aspects of hotel services the longer they stay at a hotel. We obtain similar findings in the estimated coefficient on the number of words about the negative aspects of hotel services. The estimated coefficient is also significantly positive ($\beta_{\text{Length_of_Stay}}=.05, p\text{-value}<.01$). From these estimated coefficients, we can

⁴ Due to the length of the manuscript, we do not report the results based on probit analyses. The empirical results of the probit analyses also support our hypothesis (H1a).

conclude that the length of stay is positively related to the length of online reviews, supporting H1b.

The models have the significant goodness of fit because the likelihood ratios of both models are significant (likelihood ratio chi-square for the positive aspects=10399.20, p -value<.01, and likelihood ratio chi-square for the negative aspects=9253.89, p -value<.01, respectively).

<Table V About Here>

4.3.2. The relationship between the LoS and analytical thinking

In this section, we report the empirical results of the relationship between the length of stay and analytical thinking based on linear regression analyses (Eq. (3)). Table VI results show the positive and negative aspects of hotel services. The same independent and control variables are used in the regression model specifications. In the first column (1), the estimated coefficient is significantly positive ($\beta_{\text{Length_of_Stay}}=.03$, p -value<.01). In the second column (2), the estimated coefficient is also positive ($\beta_{\text{Length_of_Stay}}=.06$, p -value<.01). These empirical results show that the level of analytical thinking reflected in the textual content of online reviews is positively associated with the length of stay, supporting H2.

The two models have significant goodness of fit. The likelihood ratio for the positive aspects is 25822.86 (p -value<.01), and that for the negative aspects is 16414.43 (p -value<.01). The R^2 is .07 for the positive aspects, while the R^2 is .04 for the negative aspects, respectively.

<Table VI About Here>

4.3.3. The relationship between analytical thinking and authenticity

We expect that the level of analytical thinking would be positively related to the authenticity level of online reviews. As the final test, we employ model specifications (Eq. (4)) similar to previous regression analyses. In this section, our interest focus is the relationship between analytical thinking and the level of authenticity reflected in online reviews. Therefore, we include analytical thinking and the length of stay as independent variables.

Table VII shows the empirical results of Eq. (4). The estimated coefficient for the authenticity level reflected in the positive aspects of hotel services is significantly positive ($\beta_{\text{Analytical Thinking}} = .69, p\text{-value} < .01$) and the estimated coefficient for the authenticity level reflected in the negative aspects of hotel services is also significantly positive ($\beta_{\text{Analytical Thinking}} = .75, p\text{-value} < .01$). Based on these estimated coefficients, we conclude that analytical thinking is positively associated with the level of authenticity reflected in online reviews, irrespective of whether the content is about the positive or negative aspects of hotel services, supporting H3. On the other hand, the length of stay is found not to be associated with authenticity. The estimated coefficients are insignificant ($\beta_{\text{Length_of_Stay}} = -.01, p\text{-value} > .10, \beta_{\text{Length_of_Stay}} = -.01, p\text{-value} > .10$, respectively).

The two models in Table VII show good measures of fit, which have a considerably significant likelihood ratio (331325.09, $p\text{-value} < .01$, 419305.93, $p\text{-value} < .01$, respectively) and R^2 (.59 and .68, respectively).

<Table VII About Here>

5. Discussion and Conclusions

5.1. Conclusions

The current study examined the impact of LoS at a hotel on review-posting behaviors. We first investigated how the LoS influences the volume and length of the written content of online reviews by analyzing hotel reviews from a leading online travel agency, Booking.com. Our findings showed that a longer stay is likely to lead consumers to post not only online reviews with written content but also compose lengthier descriptions of their hotel experiences. Further analysis showed that the LoS at hotels is associated with systematic differences in the linguistic attributes of the review content. Specifically, our analysis results found that consumers who stay longer tend to write reviews with a higher level of analytical information, thus resulting in consumers perceiving online reviews as more authentic.

5.2. Theoretical Implications

The LoS has been considered a significant issue for tourism destinations, as longer stays are positively related to higher revenue and profitability because of their ability to maximize operational profits and reduce fixed costs (Barros *et al.*, 2010; Barros and Machado, 2010). Recently, a previous study found that LoS influences a consumer's destination planning by positively influencing revisit intention (Wang *et al.*, 2018), which is an important strategic issue for tourist destinations. In this light, existing literature investigating LoS mainly viewed the construct as a dependent variable and tried to identify determining factors and situational constraints to predict a tourist's decision-making of LoS (Lee and Kim, 2021). Therefore, studies examining the impact of different LoS on consumers' post-purchase behaviors are limited (e.g., Wang *et al.*, 2018).

In particular, the significance of online reviews in terms of their influence on the purchase decision-making of other customers has been consistently emphasized in previous studies (Chatterjee, 2020; Fang *et al.*, 2016; Kim *et al.*, 2020; Kostyra *et al.*, 2016; Zhao *et al.*, 2019). However, no studies, to the best of our knowledge, have attempted to examine how LoS can affect the review-posting behaviors of consumers. Recently, many studies on online reviews in tourism examined factors influencing online review and how they influence hotel strategies and other consumers; however, no studies investigated the relationship between LoS and online reviews (Bortoluzzi *et al.*, 2020; Filieri *et al.*, 2021; Gour *et al.*, 2021; Liu and Hu, 2021; Mariani and Borghi, 2021; Shi and Chen, 2021). The current study examined how different LoS systematically influence consumer review-posting behaviors.

Moreover, another significant contribution of our study is that it suggested an important role of familiarity stemming from LoS as an underlying psychological mechanism that makes systematic changes to consumer review-posting behaviors in the process. Familiarity has been considered a critical factor influencing the consumer decision-making process in many different contexts (Baloglu, 2001; Lin, 2013; Park *et al.*, 2019; Söderlund, 2002; Tam, 2008). However, although there have been attempts to reveal the importance of familiarity (e.g., Ha and Jang, 2010; Seo *et al.*, 2013), the influence of familiarity is still under-explored in tourism studies (Park *et al.*, 2019). Therefore, we paid attention to the role of familiarity with a hotel from LoS and conceptually explained how it can influence consumer review-posting behaviors; this was empirically examined and supported by the data. We believe that our findings shed light on the research area surrounding the relationship between LoS and review-posting behaviors. This study expands the body of knowledge on the LoS in tourism.

Our study also contributes to the literature on online reviews in tourism by examining the linguistic attributes of consumer reviews. As online reviews consist of qualitative and quantitative aspects, the textual content of reviews is also important when prospect consumers make their decisions (Chevalier and Mayzlin, 2006; Kim *et al.*, 2020; Schlosser, 2011). The quantitative aspect of online reviews has been extensively covered in the tourism literature (Banerjee and Chua, 2016; Zhao *et al.*, 2019). Although recent studies have addressed textual review content to understand online reviews better, the linguistic attributes of online review comments remain under-explored (Zhao *et al.*, 2019).

Our research findings show that textual review content with analytical information is perceived as more authentic about an author's consumption experiences by prospective customers. The importance of authenticity in online reviews is gaining recognition due to information overload and conflicting information (Chen and Tseng, 2011). Authentic reviews are especially important in tourism because, due to their nature, tourists cannot truly know the quality of tourist destinations before experiencing them (Klein, 1998), which causes travelers to rely heavily on travelers' online reviews as an important information source (Kwok *et al.*, 2017; Narangajavana-Kaosiri *et al.*, 2019). In this sense, our research findings contribute significantly to the relevant literature. The practical implications of our findings are discussed in the following section.

5.3. Practical Implications

Our findings also provide useful insights for practitioners in the hotel industry. From a practical perspective, online travel agencies that provide online reviews must encourage their

customers to compose more helpful online reviews. Such reviews not only improve the value of the agencies but also make a review site more attractive to those who need travel information (Qazi *et al.*, 2016). As our findings suggest, working with hotels to devise strategies to encourage longer stays can also help online travel websites by naturally increasing the volume of more helpful online reviews. In addition, longer stays have been considered to have positive impacts mainly on profitability due to the reduced fixed costs to serve customers from a hotel's perspective. However, our findings provide novel insights into how encouragement toward longer customer stays can also help with the quality of the reviews that customers write about their experiences.

Due to the increase in conflicting information in online reviews and fake online reviews, the importance of authenticity is gaining recognition (Li *et al.*, 2020). Consumers expect online reviews to be authentic, particularly for the tourism industry, since prospective consumers cannot experience a tourist destination without visiting it (Kim and Kim, 2020). In this light, the findings can offer useful insights to hotel practitioners on how to encourage consumers to write more authentic online reviews.

5.4. Limitations and Future Research

Despite the contributions, the current study is still subject to limitations that future studies would be better suited to address. First, our findings showed the impact the length of stay has on the textual content of online reviews. However, we did not examine how the length of stay influences the review ratings. As online reviews consist of both review ratings and textual content, further studies need to investigate the impacts of the length of stay on review ratings to understand better the relationship between the length of stay and online reviews. Second, we

used field data to test hypotheses; future research might adopt surveys to capture consumers' underlying psychological mechanisms. Further studies might also need to incorporate random experimental research methods into the study design to confirm the underlying mechanisms, which would make it possible to provide a more comprehensive and deeper understanding of how the length of stay can make systematic differences in the review posting behaviors of consumers.

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Figure 1. Conceptual Framework

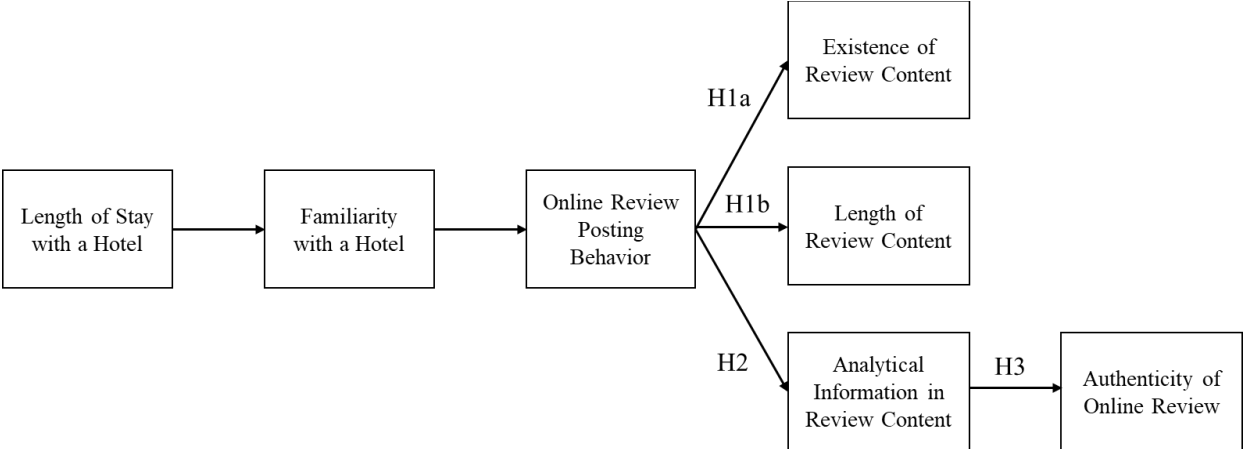


Figure 2. Screenshot of an Online Review

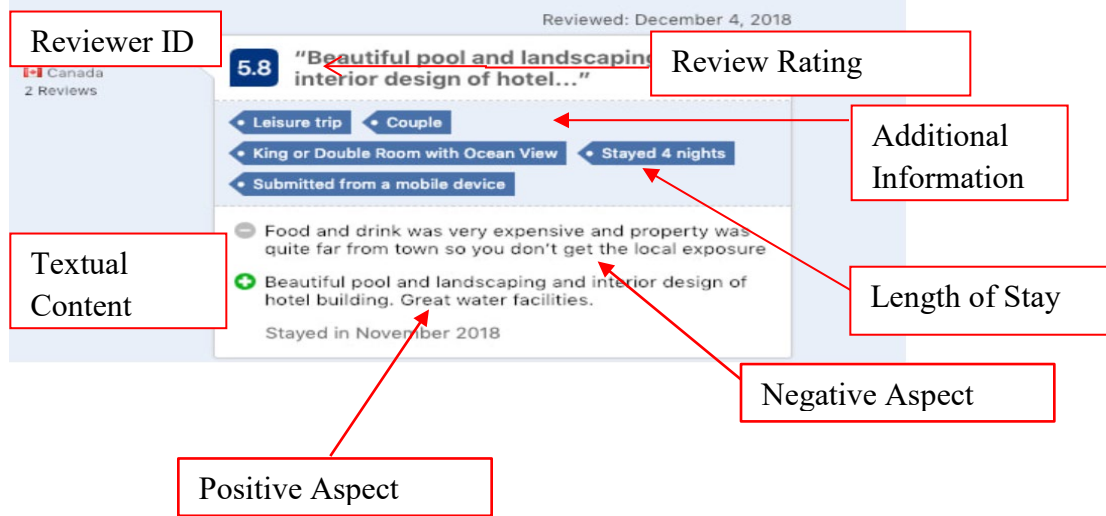


Table I. Length of Stay

Number of nights	Frequency	Percent	Cumulative Percent
1	232,491	63.20	63.20
2	87,338	23.74	86.94
3	30,217	8.21	95.16
4	10,810	2.94	98.09
5	3,854	1.05	99.14
6	1,339	0.36	99.51
7	1,183	0.32	99.83
8	305	0.08	99.91
9	169	0.05	99.96
10	158	0.04	100.00
Total	367,864	100.00	

Table II. Operationalization of the Variables

Role	Name	Operationalization	Characteristics
IV	Length of Stay	Number of nights	Discrete (positive count variable)
DV	Length of review	Word count of a review	Discrete (nonnegative count variable)
CV	Analytical thinking	Analytical thinking score measured by LIWC	Range: [0,100]
	Authenticity	Authenticity score measured by LIWC	Range: [0,100]
	Hotel-star	Number of stars assigned by Booking.com	Range: [1:5]
	Traveler type	Five traveler types (couples, families, groups, friends, and solo)	Dummy
	Purpose of trip	Two travel types (business and leisure)	Dummy
	Submission device	1: If a review is posted via mobile devices 0: Otherwise	Binary (0 or 1)

Notes: IV = Independent Variable; DV = Dependent Variable; CV = Control Variable

Table III. Descriptive Statistics

Variable	Aspect	Mean	SD	Minimum	Maximum
Length of Stay	-	1.58	.98	1	10
Length of review	Positive	9.36	12.35	0	56
	Negative	10.29	15.01	0	60
Analytical thinking	Positive	45.02	42.27	0	99
	Negative	34.25	41.18	0	99
Authenticity	Positive	27.05	37.15	0	99
	Negative	24.79	37.14	0	99
Hotel-star	-	3.37	.99	1	5
Submission device	-	.47	.49	0	1

Notes: SD = Standard Deviation

Table IV. Correlation Matrix

Variable	1	2	3	4	5	6	7	8	9
1.Length of Stay	1.00								
2.Length of review (Positive)	.02	1.00							
3.Length of review (Negative)	.04	.30	1.00						
4.Analytical thinking (Positive)	.01	.49	.33	1.00					
5.Analytical thinking (Negative)	.03	.21	.62	.42	1.00				
6.Authenticity (Positive)	.01	.29	.24	.54	.29	1.00			
7.Authenticity (Negative)	.02	.18	.53	.32	.61	.25	1.00		
8.Hotel-star	-.04	.01	-.04	-.01	-.04	-.01	-.04	1.00	
9.Submission device	-.02	-.07	-.06	-.05	-.04	-.03	-.04	.04	1.00

Notes: Pearson correlation coefficients are reported. Correlation coefficients in bold are statistically significant at a significance level of $p < .05$.

Table V. The relationship between the length of stay and online review posting

Dependent Variable	Logistic Regression		Negative Binomial Regression	
	Positive Aspect Text Posting (1)	Negative Aspect Text Posting (2)	Positive Aspect Length of Reviews (3)	Negative Aspect Length of Reviews (4)
Length of Stay	.02*** (.00)	.05*** (.00)	.03*** (.00)	.03*** (.00)
Traveler Couple	.19*** (.01)	.14*** (.00)	.08*** (.01)	.10*** (.01)
Traveler Family	.26*** (.01)	.17*** (.01)	.14*** (.01)	.13*** (.01)
Traveler Group	-.05*** (.01)	-.12*** (.01)	.02*** (.01)	-.04*** (.01)
Traveler with Friends	.66*** (.19)	.45** (.18)	.55*** (.10)	.28** (.12)
Business Trip	-.11*** (.01)	.03*** (.01)	-.20*** (.01)	.01 (.01)
Mobile Channel	-.19*** (.01)	-.17*** (.00)	-.23*** (.00)	-.21*** (.00)
Hotel-star Level	Included	Included	Included	Included
Hotel-level	Included	Included	Included	Included
Heterogeneity				
Constant	Included	Included	Included	Included
# Of observations	367,533	367,601	367,864	367,864
LR chi2	31,199.22	22,755.04	10,399.20	9,253.89
Prob>chi2	.00	.00	.00	.00
McFadden's R2	.07	.05	.01	.01

Notes: Traveler type includes couple, family, group, with friend, and solo. Solo traveler is the baseline. Purpose of type contains business and leisure type. Leisure type is the baseline. ***/**/* indicates significance at the 1%/5%/10% level. Standard errors are in parentheses.

Table VI. The relationship between the length of stay and analytical thinking

Dependent Variable	Positive Aspect Analytical Thinking	Negative Aspect Analytical Thinking
Length of Stay	.03*** (.01)	.06*** (.01)
Traveler Couple	.15*** (.01)	.16*** (.01)
Traveler Family	.22*** (.01)	.22*** (.01)
Traveler Group	-.05*** (.01)	-.09*** (.01)
Traveler with Friends	.57*** (.16)	.50*** (.17)
Business Trip	-.12*** (.01)	.07*** (.01)
Mobile Channel	-.23*** (.01)	-.18*** (.00)
Hotel-star Level	Included	Included
Hotel-level Heterogeneity	Included	Included
Constant	Included	Included
# Of observations	367,864	367,864
LR chi2	25,822.86	16,414.43
Prob>chi2	.00	.00
R-squared	.07	.04

Notes: $\ln(1 + \text{level of analytical thinking})$. Traveler type includes couple, family, group, with friend, and solo. Solo traveler is the baseline. Purpose of type contains business and leisure type. Leisure type is the baseline. ***/**/* indicates significance at the 1%/5%/10% level. Standard errors are in parentheses.

Table VII. The relationship between analytical thinking and authenticity

Dependent Variable	Positive Aspect Authenticity	Negative Aspect Authenticity
Analytical Thinking	.69*** (.01)	.75*** (.01)
Length of Stay	-.01 (.01)	-.01 (.01)
Traveler Couple	-.04*** (.01)	-.03*** (.00)
Traveler Family	-.05*** (.01)	-.05*** (.00)
Traveler Group	-.07*** (.01)	-.05*** (.00)
Traveler with Friends	.04 (.10)	-.11 (.10)
Business Trip	.01 (.01)	.01 (.01)
Mobile Channel	-.02*** (.00)	-.04*** (.00)
Hotel-star Level	Included	Included
Hotel-level Heterogeneity	Included	Included
Constant	Included	Included
# Of observations	367,864	367,864
LR chi2	331,325.09	419,305.93
Prob>chi2	.00	.00
R-squared	.59	.68

Notes: $\ln(1+\text{level of authenticity})$. Traveler type includes couple, family, group, with friend, and solo. Solo traveler is the baseline. Purpose of type contains business and leisure type. Leisure type is the baseline. ***/**/* indicates significance at the 1%/5%/10% level. Standard errors are in parentheses.