What Matters Most to Your Guests: An Exploratory Study of Online Reviews

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Abstract
An examination of over 95,000 reviews and ratings for 99 independent, high-end hotels and resorts highlights the importance of the hotel industry’s core product, namely, consistently excellent service supporting a comfortable, well-appointed room. Based on reviews and ratings posted on TripAdvisor, Expedia, and Booking.com, the analysis found that properties with the most consistent service also had the highest ratings, while hotels with inconsistent scores also had relatively low ratings. Quantitative analysis revealed that service and rooms were overwhelmingly the most important aspects of these high-end properties, while facilities, location, and amenities moved the meter far less. A qualitative analysis of the words used in the reviews again highlighted the essential nature of service and rooms, both for high-rated and low-rated properties. Top-rated reviews included such words as friendly, helpful, excellent, and beautiful, while words that appeared only in the low-rated reviews included didn’t, bathroom, front, desk, and price, hinting at issues that resulted in those lower ratings. The findings can be applied by management of both high- and low-rated hotels to avoid distractions and to focus on hotels’ fundamental purpose of providing excellent service and a good night’s sleep.

Keywords
high-end hotels, resorts, amenities, online reviews, Cornell, service rating

Disciplines
Hospitality Administration and Management

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What Matters Most to Your Guests:
An Exploratory Study of Online Reviews

By Jie Zhang and Rohit Verma

An examination of over 95,000 reviews and ratings for 99 independent, high-end hotels and resorts highlights the importance of the hotel industry’s core product, namely, consistently excellent service supporting a comfortable, well-appointed room. Based on reviews and ratings posted on TripAdvisor, Expedia, and Booking.com, the analysis found that properties with the most consistent service also had the highest ratings, while hotels with inconsistent scores also had relatively low ratings. Quantitative analysis revealed that service and rooms were overwhelmingly the most important aspects of these high-end properties, while facilities, location, and amenities moved the meter far less. A qualitative analysis of the words used in the reviews again highlighted the essential nature of service and rooms, both for high-rated and low-rated properties. Top-rated reviews included such words as friendly, helpful, excellent, and beautiful, while words that appeared only in the low-rated reviews included didn’t, bathroom, front, desk, and price, hinting at issues that resulted in those lower ratings. The findings can be applied by management of both high- and low-rated hotels to avoid distractions and to focus on hotels’ fundamental purpose of providing excellent service and a good night’s sleep.
ABOUT THE AUTHORS

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Jie J. Zhang, DBA, is an assistant professor of service operations management at the Gustavson School of Business, University of Victoria. Jie is primarily interested in improving the performance of service organizations while contributing to a sustainable future. Jie’s research has investigated topics such as environmental performance of service operations, learning and service innovation, service triads, and professional service life cycle. Her work has been published in journals such as the Journal of Operations Management, Service Science, Journal of Service Management and Cornell Hospitality Quarterly. Through her empirical research efforts, Jie strives to enhance the performance of service systems by contributing to knowledge on the value-creation interactions (i.e., coproduction) between service organizations and their customers. Jie’s teaching reflects her interest in value co-creating service systems. Jie previously taught at the University of Vermont in the U.S., and particularly enjoyed being part of the successful launch of the highly innovative Sustainable Entrepreneurship MBA (SE MBA) program at UVM. Before joining academia, Jie worked as the Systems Manager of the Division of Applied Mathematics, Brown University, for nine years.

This report includes information from members of Preferred Hotels & Resorts, the world’s largest independent hotel brand, representing more than 650 distinctive luxury hotels, resorts, and residences in 85 countries across the globe (https://preferredhotels.com). To help ensure the highest levels of customer satisfaction, every property within the brand’s portfolio is required to maintain the high quality standards and unparalleled service levels required by the Preferred Hotels & Resorts Integrated Quality Assurance Program, a customized social media tool that takes hotel quality assurance into the next generation, combining the traditional site inspection by a professional third-party expert with a customized social media element that provides real-time quality assessment scores.
The hotel industry is one of many where guests rely on online reviews to make purchase decisions. Unlike many other businesses, however, a group of third-party sites, the online travel agents (OTAs), host hotel reviews and ratings (not to mention distribution). There’s no doubt that consumers’ reviews are important both to the industry and its guests. Research has, for example, shown a robust positive link between online reputation and increase in ADR, occupancy, and RevPAR. Guest reviews also can provide a wealth of information to hotel managers regarding what elements of a guest stay are most important, provided one can analyze the guests’ comments. Given that the reviews carry the voice of the customers in the form of unsolicited feedback on hotel operations, we investigate which aspects of the perceived guest experience have the greatest effect on guests’ assessment of their hotel stay, by considering both numerical rating scores and words used in the reviews.


Moreover, consumers have become increasingly adept at evaluating the veracity of online reviews by triangulating multiple sources and their own contextual knowledge. Because it’s clear that hotels can apply online reviews for performance improvement and revenue enhancement, we investigate ways that management can analyze the rich and dynamic online review data for insights on aspects of the stay that contribute to high guest satisfaction and gaps that can be closed.

Although online hotel ratings have been found to be largely credible, it is worth noting sources of potential biases in online data, particularly fraudulent reviews, written by people who have not actually experienced the service. Another source of bias is self-selection. Even if a review is genuine, the comments represent the views of customers who have chosen the online platform to share their opinions publicly. That group may be different in some way from those who do not post reviews. We also note that guests have a diverse interpretation of rating scales, which leads to heterogeneous information.

For this analysis, we were assisted by Preferred Hotels & Resorts to collect 95,500 online ratings and reviews of 99 of its independent hotels posted over a twelve-month period on three top OTAs—TripAdvisor, Expedia, and Booking.com. Although the hotels are independent, they agree to follow the same quality standards as part of their membership association. By focusing on independent operating units in a well-defined segment with similar quality standards, we control to some extent the variations in guest preferences and demand, although the hotels and resorts range in size from under 100 rooms to well over 250 keys. The properties’ similarities allow us to focus on the effects of specific operational drivers on guests’ perceptions of their experience. In this study, we are primarily interested in finding the answers to three questions:

What are the drivers that matter the most in terms of guests’ evaluation of their experience?

How do these drivers relate to consumer review scores at the property level?

What are the identifiable consumer issues found in the review text?

Although online reviews are widely viewed as reliable, we first examine studies on the reliability of the online reviews and ratings in assessing performance. Then, our quantitative analysis uses regression to assess the effects of key operational drivers on consumer review ratings, while our qualitative study uses text analytics to uncover common consumer concerns and to infer what aspects of the guests’ stay have the greatest effect on ratings.

### Online Reviews as a Valuable Source of Feedback

Online reviews continue to rise in importance, having become second only to pricing as an element in consumers’ purchase decision process. Moreover, consumers have become increasingly adept at evaluating the veracity of online reviews by triangulating multiple sources and their own contextual knowledge. Because it’s clear that hotels can apply online reviews for performance improvement and revenue enhancement, we investigate ways that management can analyze the rich and dynamic online review data for insights on aspects of the stay that contribute to high guest satisfaction and gaps that can be closed.

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Design of the Study

We selected the 99 properties from Preferred Hotels & Resorts’ international portfolio on the basis that the selected hotels received a steady stream of daily reviews on one of the three OTAs (Booking, Expedia, or TripAdvisor) between May 1, 2015, and April 30, 2016. For this study, we focused only on reviews written in English, leaving a final sample of 95,500 reviews. This language restriction slightly reduced the number of reviews per property, yet even the hotel with the fewest reviews averaged about 1.3 English reviews per day minimum. We therefore are reasonably confident that these properties have established a solid online reputation.

Exhibit 1 shows the geographic distribution of the properties in the study, grouped by property size. The majority of the hotel properties in the study are located in Europe and North America, and nearly half of the hotels and resorts have more than 250 rooms. This is consistent with the hotel group’s focus on luxury properties.

Exhibit 2 shows the frequency distribution of total daily English reviews from the three OTA sites. The mode is around two such reviews per day, while a small number of properties received more than six reviews per day. The practical outcome of having such a strong stream of reviews is that we can continuously collect near real-time information on customer service experiences, which is not possible with post-stay surveys and mystery shoppers, for instance.

What Matters Most to Guests

To identify the drivers that matter the most in terms of guests’ evaluation of their experience, we adopt the following process. We started with a detailed list of operational drivers typically included in the post-stay questionnaires solicited by the hoteliers, and compared that set to those included in the consumer site review feedback forms. We kept items in the intersection of those two sets that are most frequently commented by reviewers. As illustrated in Exhibit 3, the area where all three circles overlap represents the drivers that matter the most to the customers, given the available data.

Typical after-stay questionnaires are highly structured and detailed about the guest’s experience in the hotel. Populating the left-hand circle in Exhibit 3, our initial list of drivers rated include front desk, ease of check-in, concierge bell desk (check-in), location and building, room, food and beverage, housekeeping, room service, service,
amenities and facilities, ease of check-out, and concierge bell desk (check-out).

The OTAs encourage reviews by providing incentives and streamlined feedback forms. As an example, Exhibit 4 shows the review submission interface on TripAdvisor. Customers evaluate their experience by providing an overall rating score, writing an open-ended review, and giving subcategory ratings for service, location, and sleep quality. Booking and Expedia provide similar mechanisms that differ slightly in the choice and wording of the specific areas to be rated.

Compiling the review categories from the three OTAs, we listed twelve review categories, four of which were rated most commonly: namely, service, room, location and building, and amenities and facilities. As shown in Exhibit 5, the number of responses to the twelve categories varies substantially, and half of the reviews gave no rating to any of the twelve subcategories. For instance, we observe that half of the reviews included a rating for service (47,337 out of the 95,500 reviews, or 49.5 percent), while just under 6 percent of the consumers gave a separate rating for check-in or checkout. Although both the review form design and the consumers’ decisions during the submission of the review could have contributed to the difference in number of ratings, it is clear that the top four rated areas identified above account for the most memorable experience for most guests.
Impact of the Drivers on Overall Rating

Each review has two overall ratings: Quantitative Score, which measures the overall experience at a hotel property; and Sentiment Score, which measures the overall sentiment of a review based on a proprietary algorithm. Out of the 95,500 reviews, we removed 808 reviews that contained words that were outside the scope of the sentiment engine’s analysis.

Given the significant variation in the number of responses across the subcategories listed in Exhibit 5, we explored whether the overall evaluations differ between those from reviewers who chose to provide subcategory ratings and those by customers who skipped the subcategory ratings. Reviewers who provided subcategory ratings appeared to be more critical in their overall evaluations. In that regard, on average, the customers who gave a rating to the service subcategory marked their overall quantitative score slightly lower (8.61 out of 10) than those who skipped the rating on service (quantitative score averaging 8.69). An even larger gap exists for the sentiment score. The mean of sentiment score is 7.11 for customers who rated service, as compared to 7.55 for those who didn’t. This observation led us to focus on the set of reviews that have both the individual subcategory ratings (that is, service, room, location and building, and amenities and facilities) and the overall rating, because we wanted to assess how the ratings in these specific operational areas relate to the satisfaction level expressed by the consumers. As mentioned earlier, we recognize that the reviews and ratings were made by customers who chose to provide evaluations based on their memory of past lodging experience. These subcategories may have served as cues that helped these customers remember more about their stay and offer clues to the drivers of the overall evaluations.

Consequently, the quantitative analysis described below focuses primarily on the effects of the hotel subcategory ratings on the overall ratings as measured by the quantitative score and sentiment score. Given that there are multiple reviews for each property during the study period, we distinguish between two levels of analysis: the individual reviews themselves and the hotel property that the reviews describe. With these nested data, we use the

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following two-level hierarchical regression model for the overall rating score of the \( j \)th review on the \( i \)th hotel:

\[
\text{Overall Rating}_{ij} = \beta_0 + \beta_1 \text{Service}_{ij} + \beta_2 \text{Room}_{ij} + \beta_3 \text{AmenitiesFacilities}_{ij} + \beta_4 \text{LocationBuilding}_{ij} + \beta_5 \text{HotelSizeDummy}_{ij} + u_i + \epsilon_{ij}
\]

Exhibit 6 shows the effect sizes estimated by the hierarchical regression model. Column 1 shows the results for dependent variable QuantitativeScore. The model’s likelihood test against a linear model is 455.77 with a \( p \)-value < 0.0001, providing evidence of cross-hotel variation. Column 2 shows the results for SentimentScore as the dependent variable. This model’s likelihood test against a linear model is 132.27, again with a \( p \)-value < 0.0001, also providing evidence of cross-hotel variation. We note that the effect sizes reported in column 1 and column 2 are comparable, which suggests similar driving forces behind the ratings of the overall experience and sentiment.

QuantitativeScore. In the case of QuantitativeScore of online reviews, what matters most is room, followed closely by the rating on service (column 1). For every point increase in these areas, there is an increase in QuantitativeScore of 0.28 point (for the room) and 0.25 point (for service). Location and building have the least impact on QuantitativeScore. This is not surprising given that the customers generally are clear about a property’s location and facilities when they book a hotel. Later, our qualitative analysis highlights another facet of this relationship, namely, that service is more important than the facilities.

We also observe systematic variation between large and small hotels in QuantitativeScore. Small hotels received better ratings than large hotels. Compared with the hotels with 250 rooms or more, which is the reference group, hotels with fewer than 100 rooms on average were rated 0.411 point higher, while medium size hotels were rated .260 point higher than large hotels in Quantitative-Score.

SentimentScore. Room and service also contribute heavily to SentimentScore, with service having only a slightly greater effect than room rating (column 2). For every one-point increase in either of these two areas, there is roughly a 0.24-point increase in SentimentScore. On average, guests who stayed in hotels with fewer than 100 rooms reported sentiment scores not significantly different from those staying in hotels with more than 250 rooms, the reference group, while medium size hotels on average scored 0.131 point higher in SentimentScore.

Consumer Preferences as Seen in the Review Text

Our qualitative analysis explores reviewers’ attitudes regarding the resorts’ attributes, based on comments found in the reviews. We tally the words used in the reviews and compare the result with overall quantitative scores to determine which attributes are associated with stable and positive reviews, and which aspects are more commonly mentioned in poor reviews. Examination of the subcategory ratings allows us to explore the factors that contribute to high customer satisfaction in specific areas, and to highlight areas that need particular attention. For example, we can compare the frequently mentioned features in hotels with high service ratings against those with low ratings.
Consumer Attitudes Found in Stable and Unstable Reviews

To gauge a hotel’s service consistency, we consider the variation in review scores during the study period. Consistent reviews may be favorable for a hotel, but only if those reviews contain high scores. When a hotel’s reviews are relatively consistent, we can infer stable underlying service delivery processes, whether strong or weak. In this study, the consistent hotels generally recorded higher overall scores. Consumer issues emerging from low-scoring reviews or frequent complaints suggest management priorities for process changes. Inconsistent reviews tend to be related to poor overall ratings in our study, and we consequently suggest that highly variable reviews, where hotels seem to suffer from unstable and unpredictable service delivery processes, require urgent management attention.11 We use coefficient of variation (CV) of the overall quantitative score to measure the consistency of the reviews a hotel accumulated over the study period. The coefficient of variation is the ratio of the standard deviation to the mean, which is a unit-less measure that allows a meaningful comparison of the level of variability in the overall quantitative scores across hotels.

We calculate the CV for each hotel over the twelve-month period using this equation:

\[
CV_j = \frac{100 \times \text{std dev}(\text{monthly average of the quantitative scores for hotel } j)}{\text{average}(\text{monthly average of the quantitative scores for hotel } j)}
\]

Exhibit 7 shows the CV frequency distribution for the overall quantitative score for the 99 hotel properties in the sample. We observe in Exhibit 7 that about 60 percent of the properties achieved a low variability (CV < 3.3), indicating relatively consistent overall quantitative scores over the twelve-month period. It is worth noting that the mean overall quantitative score for nine of the ten hotels with the lowest CVs was 9.0 or better. On the other end of the spectrum, the average monthly quantitative scores of the 14 hotels with CV above 5 fluctuate greatly, ranging from 6.52 to 8.5 during the same period.

Exhibit 8 contrasts the average overall quantitative scores of the ten hotels having the highest CV with those of the ten hotels with the lowest CV. It is clear from Exhib-
it 8 that hotels in the high CV group were rated consistently lower than those in the low CV group. It appears that the low score reviews are offsetting the positive reviews, thus detracting from the property’s online reputation. 12 A high CV also suggests high variation in the execution of the service processes, with the likelihood that the high CV group suffers from poor (or at best inconsistent) service delivery and weak configuration of the service features. The low CV group, on the other hand, can benefit from the consumer commentaries regarding how to further optimize their service design.

We see the low CV group as serving as a center of excellence where we can potentially identify consumer preferences for better service configuration. Given that it is cumbersome to list all the words mentioned in the reviews, we list selected top words mentioned in reviews that received a high overall score (greater than 9 on a scale of 10) for the ten hotels in the low CV group (see Exhibit 9).

The text analysis first confirms that service and room are the subcategories that receive the most reviewer attention. It is important to note that these reviewers are highly satisfied customers who shared their stories by elaborating on the personal experience, memories, and emotions associated with their stay. 13 The text analysis results complement the quantitative analysis by highlighting the importance of operational areas that were infrequently scored by the customers but played a significant role in influencing overall satisfaction, including food and beverage and recreational facilities.

Comparing Consumer Preferences Based on Service Ratings

Because the quantitative analysis suggests that service is the top driver of a hotel’s overall quantitative score, we examined the top words in reviews for hotels that scored high for service (4,579 hotels that scored between 9 and 10, about 10 percent of reviews) and the 5,337 (or just over 11 percent) that scored poorly (4 or below). Exhibit 10 lists the top 33 words for each group, based on the number of occurrences in the reviews.

We first observe a strong overlap in the words that appear in both favorable and unfavorable reviews, as the two lists have 23 words in common. We can confidently conclude that these descriptors are universally important for hotel guests. They include staff, comfortable, bed, clean, room, good breakfast, memorable restaurant experience, and recreational facilities, such as the pool. Many of these words also appear in the reviews of the consistently high-rated hotels, as shown in Exhibit 9.

On the other hand, words that appeared in the positive reviews but didn’t get mentioned in the poor reviews include friendly, helpful, excellent, beautiful, perfect, recommend, lovely, wonderful, amazing, and definitely.

Exhibit 8

Average overall ratings by hotels: high CV group vs. low CV group


Exhibit 9

Words most frequently mentioned in high score reviews for properties with low variability in rating (number of reviews = 8,562)

<table>
<thead>
<tr>
<th>Word</th>
<th>Total Occurrence</th>
<th>Number of Reviews that Contain the Word*</th>
</tr>
</thead>
<tbody>
<tr>
<td>hotel</td>
<td>8768</td>
<td>4246</td>
</tr>
<tr>
<td>staff</td>
<td>4406</td>
<td>3522</td>
</tr>
<tr>
<td>great</td>
<td>4348</td>
<td>2720</td>
</tr>
<tr>
<td>room</td>
<td>4055</td>
<td>2554</td>
</tr>
<tr>
<td>location</td>
<td>2870</td>
<td>2427</td>
</tr>
<tr>
<td>stay</td>
<td>3094</td>
<td>2265</td>
</tr>
<tr>
<td>exceptional</td>
<td>2279</td>
<td>2240</td>
</tr>
<tr>
<td>service</td>
<td>2162</td>
<td>1615</td>
</tr>
<tr>
<td>friendly</td>
<td>1710</td>
<td>1542</td>
</tr>
<tr>
<td>rooms</td>
<td>1708</td>
<td>1458</td>
</tr>
<tr>
<td>excellent</td>
<td>1854</td>
<td>1441</td>
</tr>
<tr>
<td>helpful</td>
<td>1488</td>
<td>1386</td>
</tr>
<tr>
<td>breakfast</td>
<td>1593</td>
<td>1353</td>
</tr>
<tr>
<td>wonderful</td>
<td>1519</td>
<td>1305</td>
</tr>
<tr>
<td>good</td>
<td>1676</td>
<td>1251</td>
</tr>
<tr>
<td>comfortable</td>
<td>1233</td>
<td>1113</td>
</tr>
<tr>
<td>nice</td>
<td>1438</td>
<td>1111</td>
</tr>
<tr>
<td>stayed</td>
<td>1251</td>
<td>1111</td>
</tr>
<tr>
<td>beautiful</td>
<td>1170</td>
<td>999</td>
</tr>
<tr>
<td>view</td>
<td>1223</td>
<td>978</td>
</tr>
<tr>
<td>pool</td>
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<td>974</td>
</tr>
<tr>
<td>clean</td>
<td>1034</td>
<td>959</td>
</tr>
<tr>
<td>perfect</td>
<td>1075</td>
<td>917</td>
</tr>
<tr>
<td>amazing</td>
<td>1162</td>
<td>913</td>
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<td>1128</td>
<td>907</td>
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<td>food</td>
<td>1048</td>
<td>904</td>
</tr>
<tr>
<td>place</td>
<td>1029</td>
<td>870</td>
</tr>
<tr>
<td>restaurant</td>
<td>964</td>
<td>846</td>
</tr>
</tbody>
</table>

Note: * Words most frequently mentioned in reviews on low-variability high-rated properties (number of reviews = 8,562).

In that list of words, we see the importance of personal interactions that engender emotional responses in creating memorable customer experiences. Another sore point that emerges in poor reviews is the bathroom.

Managerial Implications

Not surprisingly, the key drivers in customer satisfaction remain service and room. These two factors dominate other factors that often have diverted management attention, related to location and building and to amenities and facilities. This pattern holds for both the quantitative score and sentiment score, after controlling for hotel size. Hoteliers should therefore focus on the operational areas that speak volumes about service and room, such as appropriately friendly service throughout the property, as well as the quality of beds and ensuring a good night’s sleep for the guest. The traditional lodging service that delivers a good night’s sleep in a clean, well-functioning room, together with availability of an excellent breakfast, remains central to customer satisfaction.

A second implication is that operational consistency is extremely important in a hotel’s overall rating. Thus,
focusing on avoiding operational “kinks” can be more important than looking for the occasional “wow” factor. Hotels that received highly variable review scores during the twelve-month period scored much lower in the overall ratings. Needless to say, frequent complaints about a specific area, such as bathroom or breakfast, point to the issues that require immediate attention.

Third, the descriptors identified in the review text express the consumers’ desire for solid delivery of core hotel service offerings combined with favorable experiences consisting of personal and emotional interactions with the staff and a sense of well-being. As potential guests peruse the online reviews, descriptions related to these two aspects will have an impact on their booking decisions and expectations.

In conclusion, we want to once again emphasize that despite amenities creep, architectural fads, and numerous brand permutations, the core of the hotel business remains creating a positive and memorable stay by focusing on the fundamentals of hotel operations and meaningful relationship building with guests.
**Exhibit 10**

Words most frequently mentioned in positive reviews (service subcategory at 9 or above, N=4,579) vs. those in negative reviews (service subcategory at 4 or below, N=5,337)

<table>
<thead>
<tr>
<th>Service rated 9 or above</th>
<th>Service rated 4 or below</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Word</strong></td>
<td><strong>Total Occurrence</strong></td>
</tr>
<tr>
<td>staff</td>
<td>4276</td>
</tr>
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<td>hotel</td>
<td>5310</td>
</tr>
<tr>
<td>great</td>
<td>3101</td>
</tr>
<tr>
<td>room</td>
<td>2742</td>
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<tr>
<td>location</td>
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<td>1849</td>
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<tr>
<td>nice</td>
<td>1653</td>
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<td>rooms</td>
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<td>clean</td>
<td>1116</td>
</tr>
<tr>
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<td>breakfast</td>
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<tr>
<td>comfortable</td>
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<tr>
<td>food</td>
<td>853</td>
</tr>
<tr>
<td>beautiful</td>
<td>841</td>
</tr>
<tr>
<td>stayed</td>
<td>738</td>
</tr>
<tr>
<td>perfect</td>
<td>715</td>
</tr>
<tr>
<td>recommend</td>
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</tr>
<tr>
<td>lovely</td>
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<tr>
<td>wonderful</td>
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