The replies of hotels to clients through TripAdvisor: A big data analysis

Sonia San-Martín Gutiérrez*
Nadia Jiménez Torres
Universidad de Burgos
Nuria Puente Domínguez
Universidad Isabel I

Abstract
The majority of investigations with big data have up until now centred more on the comments posted by users than on the replies to those comments from the firm. The need for studies that analyse large volumes of data is therefore patent, in order to know how hotels manage the online comments that they receive. Thus, the objective of this investigation is to conduct a comparative descriptive study of the replies to 32,347 online comments from users of TripAdvisor to hotels that are located at two of the most frequently visited inland tourist destinations (Madrid and Paris) in Europe. With this purpose in mind, an analysis of big data is performed. Our results generated useful knowledge to gain insight into the management of the online reputation of hotels. Specifically, they showed higher response rates for the Parisian hotels, although the hotels in Madrid acknowledged more comments with thanks, presented more apologies, and sent more personalized messages.

Keywords: TripAdvisor, comments, online reputation, hotels, big data.

JEL codes: M31.

* Corresponding author. Email: sanmargu@ubu.es
从大数据分析TripAdvisor网站中酒店及旅馆对客户的回复信息

Sonia San-Martín Gutiérrez*
Nadia Jiménez Torres
布尔戈斯大学

Nuria Puente Domínguez
伊莎贝尔一世大学

文章摘要
到现在为止，大部分针对大数据的研究都集中于分析用户的反馈，而不是针对企业对其客户反馈所作的回复信息。这种情况引致我们关注这方面的研究，对大量的数据进行分析，了解众多酒店及旅馆是如何处理从网上得来的反馈。因此，本研究的目的为描述和比较各酒店及旅馆对一共三万二千四百三十七个TripAdvisor网上用户的网上反馈所发出的回复信息。研究地点为欧洲两个最多游客到访的城市：马德里及巴黎。我们按照上述之研究目的进行了一项针对自动回复信息的分析。研究结果让我们更了解酒店及旅馆是如何处理在电子世界中对客人的回复。具体的结果是，巴黎的酒店及旅馆都有大量特定的预设回复信息，相反，马德里人比较重视客人的反馈，比较愿意向客人道歉和发较个人化其回复信息。

关键词: TripAdvisor、反馈、网上声誉、酒店、大数据。

JEL 分类号: M31。

* Corresponding author. Email: sanmargu@ubu.es

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1. Introduction

Virtual communities are a strategic factor for the continuous improvement of tourism firms and the analysis of those communities is turning into a critical factor in the information society, in which voluminous amounts of textual data are available on Internet thanks to the mass use of online social media communications (Pabel & Prideaux, 2016). Beyond factors such as hotel costs, the online comments of users have turned into a predominant source of influential information when taking a purchasing decision (Pabel & Prideaux, 2016). Websites with user-generated content (such as TripAdvisor) have in many cases been converted into the main source of preparatory information for a purchase and shape the online reputation of the establishment – defined by Hernández, Fuentes and Morini (2012) as the set of client opinions, experiences, and evaluations of a product, service, or brand shared on websites. Hence, many studies have centred on analysing the trustworthiness of user-generated comments (Amaral, Tiago & Tiago, 2014). In addition, most studies undertaken to date have centred more on the reasons that users have to publish comments and, on their impact, rather than on the replies of firms to those comments (Revilla, Palacios & Cossio, 2015; Sparks & Bradley, 2017). Hence, the central objective of this investigation is conduct an automatic analysis of text with big data that will permit a comparative descriptive analysis of how hotels both in Madrid and Paris respond to online comments generated by users of TripAdvisor, with the final purpose of amassing new knowledge in the literature that will be of use to firms for the improvement of their online reputation. In particular, this analysis will centre on the capitals of the two principal European destinations (Spain and France) with the highest influx of tourists in 2017 (OMT, 2017), which are, in addition, the most frequently visited cities within each country (Euromonitor Internacional, 2017).

Hence, the contribution of this study to the academic literature, because it covers the perspective of hoteliers (their replies to user comments posted online), and because it uses big data from a large number of comments (comparing Madrid and Paris) posted on TripAdvisor. It also contributes to the business world, because it helps hotels to improve their management of online reputation and both the complaints and the opinions of users in their relations with the firm.

The second section of this study will present a review of the literature, the third will centre on the methodology, the fourth will unveil the main results of the investigation, and the fifth will set out the conclusions and other final considerations.

2. The management of online comments

The replies of firms to user-generated online comments have been converted into a new form of client-relations management. Thus, the replies of the firm to positive comments reveal that it listens to its clients and values them (Fernandes & Fernandes, 2017), while the replies to negative comments may contribute to client...
satisfaction (Moliner-Velázquez, 2012; Xie, Zhang & Zhang, 2014). However, despite the facility with which it responds to the comments of users on websites like TripAdvisor, previous investigations (see Levy, Duan & Boo, 2013; O’Connor, 2010; Sparks & Bradley, 2017) concluded that only a few hotels actively manage their online reputation on these platforms. Likewise, those firms that administer the content generated by the users fail to respond in an effective manner (Fernandes & Fernandes, 2017), which increases the relevance and the pertinence of undertaking investigations centred on the replies to online comments.

Although to a lesser extent than the research on the opinions and comments of clients, some studies in the literature (Bradley & Sparks, 2009; Levy et al., 2013) have analysed the types of replies that the firms can send to their clients. In the case of user-generated online comments, the investigation of Sparks and Bradley (2017), who distinguished three types of replies, stands out: those that limited themselves to sending out an acknowledgement (thanking the user for the comments, assuming responsibility for the errors and excusing themselves in a generic way), those that offered an explanation (excuses, justifications, and sincere apologies accompanied by words of regret), and those that specified the actions that have been taken in that respect (for example, investigating the matter or referring it to the appropriate section of the organization, providing product replacements, changing an internal process, changing staff training procedures, inviting the client to contact the firm directly, and offering compensation whether financial or of another kind).

According to the investigation by Kwok and Xie (2016), the online comments with most information are perceived as more valuable than comments containing less information. Therefore, given that the reply of the firm adds additional information to the comment, it is more likely that the user-generated online comments with a reply from the firm in question will be perceived as more informative, useful, and trustworthy than those comments that go unreplied (Xie et al., 2014). Firms must therefore pay attention to the online comments, as they are a good indicator of the quality of the service that is on offer (Xiang et al., 2015). Firms can increase the perceived usefulness of the comments with strategic replies (Liu & Park, 2015), even though the users that post a comment on a firm may expect no reply, if the business posts a reply, it is likely that it will, among other aspects, influence the perception of the brand or firm that other users hold and even on purchase intention (Levy et al., 2013; Xie, Kwok & Wang, 2017).

In short, replying to online comments from users is an important part of the management of the online reputation of a firm (Sparks & Bradley, 2017) and among other researchers, Kwok and Xie (2016) and Levy et al. (2013) encouraged firms to do so in an active way, providing immediate and authentic replies. Despite the above, the majority of investigations completed up until today have centred more on the online comments generated by users (especially, on the credibility of user opinions: Balagué, Martín-Fuentes, & Gómez, 2016; Kusumasondjaja, Shanka & Marchegiani, 2012) than on the replies of the firms to those comments (Sparks & Bradley, 2017). In addition, the works that revolve around the comments generated
by existing users to date have mainly focused on hotels from a single country (Yang, Mao & Tang, 2018). Research that compares two or more countries is in a minority, among which we may identify Melián-González, Bulchand-Gidumal, and González (2013), who analysed different European countries: the works of Callarisa et al. (2012), who centred on France and China and of Amaral et al. (2014), the latter focusing on restaurants of the Azores and Hawaii. In the case of investigations centred on the replies of the hotels, the tendency followed so far has also been to analyre firms from a single country, principally the USA (Kwok & Xie, 2016; Levy et al., 2013; Xie et al., 2017). Nevertheless, comparative works are difficult to find with the exception of the work of Ho (2017), who analysed various countries in Asia.

3. Methodology

This investigation is one of the few that uses big data to analyse the databases of websites with user-generated online comments (Xiang et al., 2015). In this case, the TripAdvisor website was chosen, one of the websites with the most reviews and opinions posted by users throughout the world (Amaral et al., 2014), which over the past few years has been the focus of attention of various studies (Amaral et al., 2014; Callarisa et al., 2012; Rubio, Jimenez y Mercado, 2017). The data from comScore (2017) revealed that TripAdvisor is the largest travel website in the world with over 500 million comments and opinions on the largest selection of global travel sites. In this investigation, the recommendations of Liu, Yan and Xiao (2011) were followed for the use of an algorithm (Crawler with Scrapy) and a programming language library (Python), which permits automatic searching and downloading of specific content, in this case on the replies of hotels from both cities to user comments. In the first place, the data were automatically extracted for their digitalization by using the web scrapping technique to gather the replies of the hotels to the comments from users in both cities. The comments were grouped into two databases by language and by city. In second place, the data were analysed with Meaning Cloud software that permits an analysis of the text in Spanish and in French through its plugin for Excel\(^1\). Using that software, an automated sentiment analysis of the text (text analytics) was performed with the reviews and the replies of the hotels on TripAdvisor. This methodology was chosen as one of the most widely applied and accepted techniques to process large quantities of data in the social sciences (Abdallaha, Carmana & Haffari, 2016; Arcila-Calderón, Barbosa-Caro & Cabezuelo-Lorenzo, 2016). In particular, the technique permits the automated classification of the comments under positive, negative, and neutral headings (Abdallaha et al., 2016; Arcila-Calderón et al., 2016; López, Sánchez-Alonso and Sicilia-Urban, 2015). In third place, the neutral comments were manually reclassified by the frequency of certain words mentioned in the comments and the score given to the comment, following the recommendations

\(^1\) Available online: https://www.meaningcloud.com/es/
of O’Connor (2010), and Dickinger and Mazanec (2015). The information was then inputted into the Nvivo programme, so as to study the frequency and the coincidence of words in the comments of clients and in the replies from the hotels. In fourth place, the information was descriptively analysed by blocks with the $X^2$ test, using the IBM SPSS Statistics 19 programme (the first block related to the comments generated by users and the second block contained the replies from the hotels) (see Figure 1).

Figure 1. Big data analysis process

![Diagram of the big data analysis process]

Source: Author’s own work based on Bucur, 2015.

The variables were grouped into three blocks for the comparative descriptive analysis of the information, in accordance with whether they were related with one of the following: (1) the hotel (number of the hotel, category and number of stars, city, global assessment within TripAdvisor, total number of comments and response
rate to the comments); (2) the comments that the hotel received from the users (valency, content, number of words, and score given to the hotel); and, (3) the replies that the hotel sent to the users (content, inclusion of thanks, inclusion of excuse, personalization, and number of words).

3.1. Description of the sample

All the hotels on TripAdvisor with the highest intake of tourists over the past year in the capitals of two central European destinations were analysed (OMT, 2017), in such a way that information was gathered on 32,247 comments from 1,101 hotels, from Madrid and Paris, in February and March 2017. From the sample of hotels, 36.3% were from Madrid and the remaining 63.7% from Paris. With regard to their category for both cities, most were 3 and 4-star hotels (85.7%).

4. Results

4.1. Comments from clients

Given that the focus of attention of this investigation are the replies from the hotels, the valency and the content of the comments in the analysis will only be briefly explained in this section. In the first case, from among the 32,347 comments under analysis in this investigation, 96% were positive. From a general point of view, 49% of the comments received by the hotels scored 5 or 4, which appears to indicate that the majority of people who posted a comment did so after a satisfactory experience.

In global terms, the most commented topics were the hotel rooms (74%), their location (60.4%) and the staff (56%), but not the quality-price ratio (29.6%), nor the cleanliness (13.4%). Looking a little more closely at these comments, we concluded that there was a significant relation between the topic of each comment and the city where the hotel is located, after analysing the associations between both variables, in accordance with the chi-squared tests (Table 1).

<table>
<thead>
<tr>
<th>Topics of the comments</th>
<th>City</th>
<th>X²</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rooms</td>
<td></td>
<td>33,639.25</td>
<td>0.00</td>
</tr>
<tr>
<td>Cleanliness</td>
<td></td>
<td>34,821.46</td>
<td>0.00</td>
</tr>
<tr>
<td>Location</td>
<td></td>
<td>32,389.81</td>
<td>0.00</td>
</tr>
<tr>
<td>Personal</td>
<td></td>
<td>32,370.84</td>
<td>0.00</td>
</tr>
<tr>
<td>Quality/price</td>
<td></td>
<td>32,365.52</td>
<td>0.00</td>
</tr>
</tbody>
</table>
When analysing the topics of the comments by the city to which the hotel belongs (Figure 2), some interesting differences may be appreciated. Most comments sent to the hotels of Madrid were on the rooms (62.4%), but with a lower percentage than in those of Paris (80.6%). Something similar occurred with cleanliness, which is the least commented, despite its presence in 25.8% of the comments on hotels in Madrid, a figure that contrasts with 6.3% of Parisian hotels. Another of the differences was that the second most commented topic was the staff (58.5%), followed by the location (58%); while in Paris, it appears that more importance was given to the location (61.7%) than to the staff (55.9%).

Figure 2. Topics covered in the comments by city

As may be appreciated in Table 2, our investigation also indicated that, in accordance with the chi-square tests, there was a significant relation between the scores of the comments and their content, in such a way that 92.9% of the comments that speak about the hotel staff received a score of 4 or 5. The same happens with those who speak about the location of the hotel (91.6%), the rooms (90.6%), the quality-price relation (90%), and cleanliness (86.8%).

Table 2. Relation between topic and score and valency of comments

<table>
<thead>
<tr>
<th>Topic of the comments</th>
<th>Scores of the comments</th>
<th>Valency of the comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X^2</td>
<td>p</td>
</tr>
<tr>
<td>Rooms</td>
<td>155.82</td>
<td>0.00</td>
</tr>
<tr>
<td>Cleanliness</td>
<td>138.61</td>
<td>0.00</td>
</tr>
<tr>
<td>Location</td>
<td>274.63</td>
<td>0.00</td>
</tr>
<tr>
<td>Personal</td>
<td>511.48</td>
<td>0.00</td>
</tr>
<tr>
<td>Quality/Price</td>
<td>39.43</td>
<td>0.00</td>
</tr>
</tbody>
</table>
Likewise, the chi-squared tests, shown in Table 2, also confirmed a significant relation between the valency of the comment and its content. Along the same lines, our results confirmed, as may be appreciated in Figure 3, that 5.44% of the comments posted on the cleanliness of the hotel were negative, percentages that dropped to 4.07% in those on the quality-price relation, to 4% in comments on the rooms, to 3.19% in comments on the hotel location, and to 3.02% in those that referred to the staff.

Figure 3. Topics covered in the comments by city

4.2. Replies from the hotel

The first point that we analyse in this section is the response rate of the hotels. It may be affirmed in this regard that 41.5% of the hotels under study responded to user-generated online comments on 80-100% of occasions, although only 14.9% made it a practice to do so.

The second step is to ascertain how the hotels responded to this type of comment. On this point, as may be appreciated in Table 3, our results showed that, in accordance with the chi-squared tests, there was a significant relation between the response rate of the hotel and some of their characteristics, such as the city in which it is found, its category, and its global evaluation within TripAdvisor.

Table 3. Relation between the characteristics of the hotel and its response rate

<table>
<thead>
<tr>
<th>Characteristics of the hotel</th>
<th>Response Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$X^2$</td>
</tr>
<tr>
<td>City</td>
<td>509.534</td>
</tr>
<tr>
<td>Category</td>
<td>2,575.932</td>
</tr>
<tr>
<td>Assessment</td>
<td>4,216.214</td>
</tr>
</tbody>
</table>
If we study the significant relation between the city in which the hotel is found and its response rate to user comments, we see that 44.5% of Parisian hotels (as against 36.6% of the hotels in Madrid) responded to over 80% of the comments they received (Figure 4).

Figure 4. Response rate of the hotels by city

Following the other two significant relations previously found, in Figure 5 we see that the greater the number of hotel stars (category), the greater the response rates of the hotels (except in the case of the 1-star hotels).

Figure 5. Classification of hotels with a response rate of over 80% by their category

Similarly, we see in Figure 6 that while 89% of the hotels with a total score of 5 points responded to the comments of the clients in over 80% of occasions, the figure was lower as the scores fell (except in the case of hotels with a total score of 2.5).
In third place, we analysed the content of the replies from the hotels. In particular, there were 30,995 replies to positive comments and 1,353 replies to negative comments. Taking into account the high rate of satisfaction expressed in the user-generated comments, it is hardly surprising that 90% of the replies from hotels included an acknowledgement of thanks and only 5.4% an excuse. However, the fact that 79.3% of the replies with apologies included a note of thanks was of interest. In accordance with our results, the chi-squared tests confirmed a significant relation between the valency of the commentary and both the replies of thanks and of apology (Table 4), in such a way that the hotels almost always usually expressed thanks for the positive comments (90.3%), but 75.6% of their replies included no apology when the comment was negative. Continuing the analysis of the characteristics of the replies from the hotels, the chi-squared tests also confirmed a significant relation between the valency of the comments received and the personalization of the replies from the hotels. Along these lines, the hotels personalized their responses to positive comments on 40.27% of occasions and to negative comments on 37.43% of occasions.

Table 4. Relation between the characteristics of the response, the valency of the comment, and the city of the hotel

<table>
<thead>
<tr>
<th>Characteristics of the response</th>
<th>Valency of the comments</th>
<th>City</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(X^2)</td>
<td>(p)</td>
</tr>
<tr>
<td>Thanks</td>
<td>32,446.90</td>
<td>0.00</td>
</tr>
<tr>
<td>Apology</td>
<td>33,335.67</td>
<td>0.00</td>
</tr>
<tr>
<td>Personalization</td>
<td>32,353.36</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Taking the above into account, we analysed the relation between the characteristics of each reply (if it includes an acknowledgement of thanks or an apology and if it is personalized) and the city in which the hotel is found (Table 4), concluding
that, in accordance with the chi-squared tests, there are significant relations between those variables. Analysing the type of response by city (Figure 7), it may be appreciated that the hotels in Madrid are the ones that thank the users for their comments (91.4%), personalize their messages more (65.5%) and they also apologise more (6%), despite the percentage of positive comments from Madrid (95.3%), it is slightly lower than those from Paris (96.1%).

Figure 7. Type of response by city

From the point of view of their length, the responses under analysis in our investigation had between 1 and 60 words, with an average number of words of 37.76 (S=12.591). Analysing the number of words in the replies by city, it may be seen that half of the hotels (51% of hotels in Madrid and 50.1% of those in Paris) decided on a content of between 40 and 60 words, although most (30.3% in the first case and 29.8% in the second) contained between 40 and 49 words in their replies.

In accordance with our results, the chi-squared tests confirmed a significant relation between the number of words in the reply and the response rate of the hotel (Table 5); the hotels with lower response rates providing the shortest replies.

Table 5. Relation between the length of the replies and the response rate of the hotel

<table>
<thead>
<tr>
<th>Response rate</th>
<th>X²</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of words in the reply</td>
<td>853.53</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Finally, with regard to the topic of the replies, 34.6% spoke of the quality-price relation, despite only 29.6% of the comments referring to this topic. The remainder of the topics that were covered referred to the hotel staff (20.4%), the rooms (18.4%), and the location of the hotel (16%), but not on cleanliness (0.9%), which was the least frequent.
5. Discussion

Although it was still a minority of hotels that replied to the user-generated online comments, conscientiousness with regard to replying to the comments continued to increase slowly, a fact that Sparks and Bradley (2017) had previously noted some years ago after comparing their results with those of previous investigations (Levy et al., 2013; O’Connor, 2010). However, in which city were the hotels more conscientious about the importance of managing the online comments of their users? In accordance with our comparative investigation between the two cities, they were principally the hotels of Paris. In addition, we can affirm that, in line with the investigation of Levy et al. (2013), the hotels with more stars had higher response rates than the others. In the same way, the greater the number of hotel stars, the greater their response rates. In the same way, the greater the number of hotel stars, the greater their response rate, except in the case of the 1-star hotels. It is a striking result, since Xie et al. (2017) affirmed that the luxury hotels are those that benefitted most from the positive effects of the replies, so it is surprising that the 1-star hotels have a response rate that is higher than the 2- and 3-star hotels. In any case, it is somewhat positive, as it indicates that the low-category hotels try to improve their online reputation and, in any case, we recommend that all the hotels also take care to manage the online relations with their clients.

From a comparative point of view between cities, although the hotels in Paris had higher response rates, it was the hotels of Madrid that thanked the users most for their comments, that apologized (despite their lower percentage of positive comments than Paris), that personalized their messages most referring to the user by name. In this sense, our results coincided with those of Sparks and Bradley (2017), who affirmed that the most widely used method to acknowledge the comments from users after reading them was to thank them for the comment and that few firms excused themselves. Nevertheless, given that the vast majority of the comments were positive, we analysed the relation between the valency of the comment and the type of reply, concluding that 75.6% offered no apologies after a negative comment.
Faced with this result, we recommend that hotels define an acceptable CRM (Customer Relationship Management) strategy on the basis of the online comments and that a staff member in the firm fulfil the role of a community manager to manage the online reputation of the hotel. In addition, we should bear in mind that the negative comments were considered more credible than the positive ones by the users (Kusumasondjaja et al., 2012), for which reason we should lend more attention to those sorts of comments. Given that the impact of the hotel replies depends on their honesty (sincerity perceived of the user), their detail (covering all the proposed questions), and their acceptability (sufficient amount of information) (Sparks & Fredline, 2007), we recommend sincere apologies to a negative comment and that, as Sparks and Bradley (2017) suggested, an explanation be given in the reply to the user of the specific actions that will be taken on the matter. In addition, it would be advisable to thank the user for any type of comment (verbally or through some compensation), to demonstrate that the firm listens to its clients and values their opinions, because as previous investigations have suggested (Xiang et al., 2015), a reply from the firm is an indicator of the quality of the service that is offered that should be used in a strategic way for the purposes of improvement (Sparks and Bradley, 2017).

In line with Melián-González et al. (2013), our results showed that positive comments were more frequent than negative ones, which appears to indicate that, regardless of the city in which the hotel is found, the majority of people posted a comment in replies to a satisfactory experience. From a global point of view, most comments were on the following topics: the rooms, the location, and the staff of the hotel. Nevertheless, there are some differences by city, because, although the rooms were the topics with most comments, their importance was greater in Paris. In the same way, although cleanliness was the topic with fewest comments, it was of greater importance in Madrid. Taking those points into account, we recommend that hotels from both cities adapt their replies to the concerns of their users, because managing their expectations in an acceptable way will improve or reinforce their satisfaction levels, generating a greater probability of loyalty and prescription and recommendation to other users.

6. Conclusions

With regard to the main contributions of this study, it has to be pointed out, in the first place, that it is a study on the replies of hotels to online comments from the hotel users posted on the TripAdvisor website, somewhat under analysed in the literature (Levy et al., 2013) in comparison with the investigations on the comments themselves. In second place, it has to be mentioned that it is a comparative study using big data, which is practically unknown in the investigations on hotel replies. In fact, we know of only one study of this type (Ho, 2017) that is centred on various Asian countries, which means that our investigation on the hotels of two European capitals, Madrid and Paris, is very novel. In third place, the use of big data may be
highlighted, a technique hardly employed to date for the analysis of website databases of user-generated online comments (Xiang et al., 2015). It was especially useful, however, to analyse the whole population of hotels in Madrid and Paris present on TripAdvisor.

In the future, this work could be improved through the design of a causal model to explain the factors, that to the greatest extent, impact on the generation of online reputation and in which the influence of factors may be considered such as the age of the user who introduces comments and replies in networks such as TripAdvisor (San-Martín, Prodanova & Jiménez, 2015).

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sobre la responsabilidad corporativa del hotel sobre el comportamiento de quejas
Annex

Table 7. Coding of the variables in the investigation

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coding</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hotel-related variables</strong></td>
<td></td>
</tr>
<tr>
<td>Name of hotel</td>
<td>---</td>
</tr>
<tr>
<td>Category (nº stars)</td>
<td>1-5</td>
</tr>
<tr>
<td>City</td>
<td>Madrid / Paris</td>
</tr>
<tr>
<td>Global assessment of TripAdvisor</td>
<td>1-5</td>
</tr>
<tr>
<td>Total number of comments received</td>
<td>Range (0-499; 500-999; 1000-1499; 1500-1999; 2000-2499; 2500-2999; 3000-3499)</td>
</tr>
<tr>
<td>Response rate of comments received</td>
<td>Range (0-20%, 20,01-40%; 40,01-60%; 60,01-80%; 80,01-100%)</td>
</tr>
<tr>
<td><strong>Variables related to user comments</strong></td>
<td></td>
</tr>
<tr>
<td>Valency</td>
<td>Positive / Negative</td>
</tr>
<tr>
<td>Hotel rooms</td>
<td>Yes/ No</td>
</tr>
<tr>
<td>Cleanliness of the hotel</td>
<td>Yes/ No</td>
</tr>
<tr>
<td>Location of the hotel</td>
<td>Yes/ No</td>
</tr>
<tr>
<td>Hotel staff</td>
<td>Yes/ No</td>
</tr>
<tr>
<td>Quality/price relation of the hotel</td>
<td>Yes/ No</td>
</tr>
<tr>
<td>Number of words</td>
<td>Range (1-9; 10-19; 20-29; 30-39; 40-49; 50-59, 60-69)</td>
</tr>
<tr>
<td>Score given to the hotel</td>
<td>1-5</td>
</tr>
<tr>
<td><strong>Variables related to the replies of the hotels to the comments received from users</strong></td>
<td></td>
</tr>
<tr>
<td>Content (the reply refers to...)</td>
<td></td>
</tr>
<tr>
<td>Hotel rooms</td>
<td>Yes/ No</td>
</tr>
<tr>
<td>Hotel cleanliness</td>
<td>Yes/ No</td>
</tr>
<tr>
<td>Location of the hotel</td>
<td>Yes/ No</td>
</tr>
<tr>
<td>Hotel staff</td>
<td>Yes/ No</td>
</tr>
<tr>
<td>Quality/price relation of the hotel</td>
<td>Yes/ No</td>
</tr>
<tr>
<td>Includes thanks</td>
<td>Yes/ No</td>
</tr>
<tr>
<td>Includes apology</td>
<td>Yes/ No</td>
</tr>
<tr>
<td>Is personalized (responds to the comment calling users by their names)</td>
<td>Yes/ No</td>
</tr>
<tr>
<td>Number of words</td>
<td>Range (1-9; 10-19; 20-29; 30-39; 40-49; 50-59)</td>
</tr>
</tbody>
</table>
Notes on Contributors

Name: Sonia San-Martín Gutiérrez  
Position: Catedrática de Universidad  
School / Faculty: Universidad de Burgos  
Address: C/ Parralillos, s/n, 09001 Burgos, España  
Telephone: 947258950  
Email: sanmargu@ubu.es

Name: Nadia Jiménez Torres  
Position: Ayudante Doctor  
School / Faculty: Universidad de Burgos  
Address: C/ Parralillos, s/n, 09001 Burgos, España  
Telephone: 947258950  
Email: nhjimenez@ubu.es

Name: Nuria Puente Domínguez  
Position: Doctora. Coordinadora del Máster en Marketing Digital  
School / Faculty: Universidad Isabel I  
Address: C/ Fernán González, 76, 09003 Burgos, España  
Telephone: 947671731  
Email: nuria.puente.dominguez@ui1.es