

## **Analysis of online hotel ratings: the case of Bansko, Bulgaria**

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### **Abstract**

This research note analyses the online ratings of 110 hotels in Bansko, Bulgaria. Results reveal that tangible product elements (excluding free Wi-fi) do not influence the online rating of hotels. The ratings in Booking.com and TripAdvisor are highly correlated, and the same is valid for the various Booking.com ratings of individual properties. Hotel's size and category negatively influence its online rating, while the number of reviews has a positive impact. Managerial implications, limitations and directions for future research are also discussed.

**Key words:** online hotel ratings; ski resort; Booking.com; TripAdvisor; Bulgaria

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## Introduction

User-generated content and the electronic word-of-mouth become ever more important in travel and tourism. Tourists check the online reviews of hotels in various websites like TripAdvisor and Booking.com in order to inform themselves about the properties and decide whether and where to make a booking. These websites provide numerous reviews of the accommodation establishments and generate an online rating for each property on the basis of the individual user reviews. This research note concentrates on the online ratings of hotels and the factors that influence them, by using the Bulgarian ski resort Bansko as a case study destination.

Analysis of online hotel ratings is important, because prior research has indicated that electronic word-of-mouth influences book intentions and the decision making process of hotel customers (Gretzel & Yoo, 2008; Serra Cantallops & Salvi, 2014; Vermeulen & Seegers, 2009). Sparks & Browning (2011), for example, indicate that customers are more influenced by early negative reviews. However, Melián-González, Bulchand-Gidumal & González López-Valcárcel (2013) state that early reviews of a hotel tend to be disproportionately negative, i.e. if a hotel has too few reviews its rating might be quite low and this might influence the behaviour of potential customers. As the number of reviews increases the reviews become more balanced. Stringam & Gerdes (2010) undertake a context analysis of online hotel reviews in order to identify the words used by a reviewer in order to justify a rating given to a hotel. 'Clean', 'staff', 'breakfast', 'bed', 'price', 'restaurant', 'pool', 'bathroom', 'airport', 'downtown' and 'view' are reported as the ten most frequently used words. In general, the list of words provided by the authors shows that both tangible and intangible hotel product elements and its location are mentioned by the customers in their reviews. Similar results have been reported in other studies as well (e.g. Chaves, Gomes & Pedron, 2011).

Research has also indicated that online reviews could provide valuable information about customers' satisfaction (O'Connor, 2010; Zhou, Ye, Pearce & Wu, 2014) and preferences (Li, Law, Vu, Rong & Zhao, 2015) and could, thus, be used in business intelligence. On the other hand, Sridhar & Srinivasan (2012) find that 'online reviewers (i.e., online opinion leaders for products for potential consumers) are influenced by the ratings of other online opinion leaders'. This means that if a hotel attracts mostly positive reviews, then the new reviews might also be mostly positive (a possible 'halo' effect), which raises the question for the proper management (monitoring and responding) of the online reviews a hotel receives in the various websites (cf. O'Connor, 2010).

Furthermore, research has revealed that the online reviews received by hotels have ultimately an impact on their financial performance. Xie, Zhang and Zhang (2014), for example, find that the overall rating of the hotel is the most important factor that influences the hotel performance in terms of RevPAR. In a similar vein, Ye, Law & Gu

(2008) show that the average rating of hotel's online reviews positively influences its sales and these findings are confirmed by Ögüt & Kamil (2011). This again justifies the necessity the hoteliers to manage the online reputation of their properties in review websites like TripAdvisor, Booking.com and others.

Usually hotels sell their rooms via various distribution channels (Ivanov & Zhechev, 2011), many of which have their own online hotel rating system. It is entirely possible that a hotel has an inconsistent (star) rating across different distribution channels (Guillet & Law, 2010) which could restrain the customers from booking.

In the light of the above this research note raises the following research questions:

- ✓ RQ1: Are the various online ratings of hotels in different websites correlated?
- ✓ RQ2: Does the number of reviews of a hotel influence its online rating?
- ✓ RQ3: Does hotel's category influence its online rating?
- ✓ RQ4: Does hotel's size influence its online rating?
- ✓ RQ5: Do hotel's facilities and services influence its online rating?

## **Methodology**

For the purpose of this study the authors selected two of the largest hotel review databases with global reach: Booking.com and TripAdvisor. The two systems use different approach to the hotel reviews. Xu (2014) states that the credibility of the review depends on the credibility of the reviewer. In TripAdvisor every person can write a review, regardless whether he stayed at the hotel or not, thus creating the possibility for fake reviews and mistrust in their credibility. Contrarily, reviews in Booking.com may be written only by guests who have actually stayed in the reviewed hotel via a reservation through the Booking.com website. That's why Booking.com reviews and ratings should be considered as more objective and subject to less manipulation compared to reviews in TripAdvisor. Data from these two systems have been used in other studies as well (e.g. Ivanov, 2014).

As a destination we have selected the ski resort Bansko, Bulgaria (<http://www.bansko.bg>), due to the following reasons:

- ✓ The destination is popular among Bulgarian and foreign tourists;
- ✓ Hotels in the destination are presented nearly comprehensively in Booking.com which provides a good ground for empirical research.

Data were collected during a four-week period from 10<sup>th</sup> February to 10<sup>th</sup> March 2014. The Booking.com profiles of 146 accommodation establishments in Bansko, Bulgaria, were checked. For each property the following data were collected:

- ✓ *Property's characteristics* – category, number of rooms, distance from the ski lift, distance from the town centre, affiliation to a hotel chain, facilities and services (swimming pool, parking, fitness, spa, ski equipment rental, room board basis, business

centre, animation programme, babysitting/child care, availability of non-smoking rooms and rooms for disabled guests);

- ✓ *Booking.com ratings of the property* – total rating, and specific ratings for staff, cleanliness, comfort and value for money;

- ✓ *Number of guest reviews in Booking.com;*

- ✓ *Participation of the property in Booking.com's Preferred Hotels programme.*

Only 110 hotels of the checked properties had Booking.com ratings at the time of data collection. That's why only they were included in the data analysis. Additionally, for 42 of them the authors retrieved the rating and the number of reviews in TripAdvisor. Sample characteristics are presented in Table 1.

**Table 1.** *Sample characteristics*

| <b>Characteristic</b>  | <b>Frequency</b> | <b>Share</b> |
|------------------------|------------------|--------------|
| <i>Category</i>        |                  |              |
| 2 stars                | 15               | 13.64%       |
| 3 stars                | 57               | 51.82%       |
| 4 stars                | 33               | 30.00%       |
| 5 stars                | 5                | 4.55%        |
| <i>Number of rooms</i> |                  |              |
| Up to 50               | 74               | 67.27%       |
| 51-100                 | 19               | 17.27%       |
| Over 100               | 17               | 15.45%       |
| <b>Total</b>           | <b>110</b>       | <b>100%</b>  |

Differences between the various Booking.com ratings of hotels on the basis of their category and size were determined via ANOVA, Tukey's HSD and Scheffe's post hoc tests. Pearson correlation analysis was used to identify the relationships between the Booking.com and TripAdvisor ratings and number of reviews. Finally, the impact of properties' characteristics on its total Booking.com rating was determined via multiple regression analysis.

### **Discussion of results**

Table 2 shows the bivariate Pearson correlations among the various Booking.com ratings of the hotels. Unsurprisingly, all Booking.com ratings of the hotels are highly and positively correlated and are statistically significant at 1% level (Table 2). This result is natural for the correlations of the total rating (first column of the table), considering the fact that total Booking.com rating of a hotel is based on its partial ratings (value for money, staff, cleanliness and comfort). However, the very high correlations among the partial ratings (especially between staff, cleanliness and comfort ratings in the last two columns) are suggestive that hotel guests might have the tendency to generalize and experience 'halo effect' – if they evaluate the hotel highly on one of the ratings they might be more generous on the other ratings as well. The reverse might be also true – if they evaluate the hotel very low on one of the ratings, customers might tend to depress

their score for the other ratings as well. Further research is needed to investigate whether such halo effect actually exists.

**Table 2.** *Bivariate Pearson correlations between the various Booking.com ratings of hotels in Bansko*

|                        | <i>Total rating</i> | <i>Value for money</i> | <i>Staff</i> | <i>Cleanliness</i> |
|------------------------|---------------------|------------------------|--------------|--------------------|
| <i>Value for money</i> | 0.898***            |                        |              |                    |
| <i>Staff</i>           | 0.860***            | 0.815***               |              |                    |
| <i>Cleanliness</i>     | 0.886***            | 0.750***               | 0.697***     |                    |
| <i>Comfort</i>         | 0.851***            | 0.720***               | 0.627***     | 0.757***           |

Note: N=110; \*\*\* Significant at 1% level

Table 3 reveals that the total Booking.com rating of hotels is positively correlated with their TripAdvisor rating ( $\rho=0.530$ ,  $p<0.05$ ). This means that both databases show relatively similar evaluations of hotels in Bansko. Considering this correlation and the results in Tables 2 we can answer affirmatively to RQ1.

**Table 3.** *Bivariate Pearson correlations between hotel online ratings and number of reviews*

|   |                     | <i>Booking.com rating</i> | <i>Number of reviews in Booking.com</i> | <i>TripAdvisor rating</i> | <i>Number of reviews in TripAdvisor</i> |
|---|---------------------|---------------------------|---|---------------------------|---|
| <i>Number of reviews in Booking.com</i> | Pearson Correlation | 0.215*                    |   |                           |   |
|   | N                   | 110                       |   |                           |   |
| <i>TripAdvisor rating</i>               | Pearson Correlation | 0.530**                   | 0.326*                                  |                           |   |
|   | N                   | 42                        | 42                                      |                           |   |
| <i>Number of reviews in TripAdvisor</i> | Pearson Correlation | 0.355*                    | 0.406**                                 | 0.275                     |   |
|   | N                   | 42                        | 42                                      | 42                        |   |
| <i>Hotel star category</i>              | Pearson Correlation | -0.108                    | 0.349**                                 | -0.088                    | 0.531**                                 |
|   | N                   | 110                       | 110                                     | 42                        | 42                                      |

Note: \*\* Significant at 5% level; \* significant at 1% level

Table 3 furthermore indicates that the number of reviews for a hotel in Booking.com and in TripAdvisor is positively correlated to hotel's rating in the respective system ( $\rho=0.215$  for Booking.com and  $\rho=0.275$  for TripAdvisor), although the correlation is significant at the 10% level only for Booking.com. If a guest is not satisfied with his stay, he might be more willing to share his negative experience in the two systems. On the contrary, satisfied guests might have less drive to comment. Therefore, hoteliers should stimulate their guests to evaluate their stay because this would increase the probability of more positive reviews and, ultimately, higher rating. In this regard the answer to RQ2 is affirmative.

Looking at the bivariate correlations in Table 3 we observe some peculiar results. Firstly, the official star category of the hotel is positively correlated with the number of its reviews in Booking.com ( $\rho=0.349$ ,  $p<0.05$ ) and TripAdvisor ( $\rho=0.531$ ,  $p<0.05$ ), i.e. higher category hotels receive more reviews. From one side, this finding might be a result of a pure quantitative reason: more reservations made at higher category hotels via Booking.com, which would elicit more reviews. From another side, the guests for higher category hotels might be more willing to write reviews. Further research is needed to shed light into these issues.

Secondly, although small and not statistically significant, the official star category of the hotel is negatively correlated with its online rating in Booking.com ( $\rho=-0.108$ ) and TripAdvisor ( $\rho=-0.088$ ), i.e. tourists tend to evaluate lower category hotels in Bansko slightly higher than higher category hotels. This conclusion is further confirmed by the ANOVA results summarized in Table 4 – 4-star hotels in Bansko have systematically lowest ratings compared to the other properties. Differences are especially significant for total Booking.com rating between 4- and 5-star hotels (Tukey’s HSD significant at  $p<0.10$ ), value for money rating between 2- and 4-star ( $p<0.01$ ) and between 3- and 4-star hotels ( $p<0.01$ ), staff rating between 2- and 4-star ( $p<0.05$ ) and between 3- and 4-star hotels ( $p<0.01$ ), cleanliness rating between 4- and 5-star hotels ( $p<0.05$ ), comfort rating between 3- and 5-star ( $p<0.05$ ) and 4- and 5-star hotels ( $p<0.05$ ). While one would expect 5-star hotels to have higher ratings than 4-star hotels, it is not expected 2- and 3-star hotels to be evaluated higher than 4-star properties. Probably the reason is that 2-, 3- and 5-star hotels meet the expectations of their guests, while 4-star hotels fail to do it. In light of the above discussion the answer to RQ3 is affirmative – category influences the online rating of the hotels in Bansko.

**Table 4.** Differences of hotel online ratings by category and size

| Characteristic         | Ratings                   |                  |                  |                  |                  |
|------------------------|---------------------------|------------------|------------------|------------------|------------------|
|                        | Mean [Standard deviation] |                  |                  |                  |                  |
|                        | Total rating              | Value for money  | Staff            | Cleanliness      | Comfort          |
| <i>Category</i>        |                           |                  |                  |                  |                  |
| 2 stars                | 8.013<br>[0.986]          | 8.507<br>[0.983] | 8.033<br>[1.202] | 7.673<br>[1.371] | 7.927<br>[1.264] |
| 3 stars                | 7.889<br>[0.911]          | 8.149<br>[1.057] | 8.026<br>[1.146] | 8.012<br>[1.051] | 7.840<br>[0.937] |
| 4 stars                | 7.482<br>[0.571]          | 7.442<br>[0.740] | 7.127<br>[0.776] | 7.500<br>[0.778] | 7.715<br>[0.607] |
| 5 stars                | 8.440<br>[0.826]          | 7.960<br>[1.021] | 8.220<br>[1.099] | 8.860<br>[0.826] | 8.960<br>[0.669] |
| F-statistic            | 3.145**                   | 5.542***         | 5.827***         | 3.559**          | 2.834**          |
| <i>Number of rooms</i> |                           |                  |                  |                  |                  |
| Up to 50               | 7.915<br>[0.897]          | 8.196<br>[1.038] | 8.014<br>[1.143] | 7.882<br>[1.150] | 7.868<br>[0.983] |

|             |                  |                  |                  |                  |                  |
|-------------|------------------|------------------|------------------|------------------|------------------|
| 51-100      | 7.374<br>[0.730] | 7.389<br>[0.753] | 7.026<br>[0.842] | 7.584<br>[0.859] | 7.679<br>[0.830] |
| Over 100    | 7.835<br>[0.660] | 7.682<br>[0.890] | 7.518<br>[0.904] | 8.012<br>[0.783] | 8.065<br>[0.694] |
| F-statistic | 3.155**          | 6.106***         | 7.049***         | 0.834            | 0.789            |
| Total       | 7.809<br>[0.855] | 7.977<br>[1.018] | 7.766<br>[1.122] | 7.851<br>[1.056] | 7.865<br>[0.919] |

Note: \*\*\* Significant at 1% level; \*\* significant at 5% level

Similar to category, size does matter (RQ4). Small hotels (up to 50 rooms) outperform midsized properties (51-100 rooms) in their total (Tukey's HSD significant at  $p < 0.05$ ), value for money ( $p < 0.01$ ) and staff ( $p < 0.01$ ) ratings. Results might be attributable to the fact the most hotels with less than 50 rooms are family hotels with closer staff-guest relations which probably influence guests' perceptions of the value they receive.

**Table 5.** *Regression analysis*

| <i>Dependent variable:</i>          | <i>Unstandardized</i> |            | <i>Standardized</i> |          |             |
|-------------------------------------|-----------------------|------------|---------------------|----------|-------------|
|                                     | <i>Coefficients</i>   |            | <i>Coefficients</i> |          |             |
| Booking.com rating                  | B                     | Std. Error | Beta                | <i>t</i> | <i>Sig.</i> |
| (Constant)                          | 6.192                 | 0.991      |                     | 6.245    | 0.000       |
| Hotel star category                 | -0.034                | 0.169      | -0.030              | -0.203   | 0.840       |
| Number of rooms                     | -0.002                | 0.002      | -0.137              | -0.892   | 0.375       |
| Member of a hotel chain             | 0.476                 | 0.723      | 0.075               | 0.659    | 0.512       |
| Distance from Bansko ski lift in km | 0.102                 | 0.069      | 0.159               | 1.484    | 0.141       |
| Distance from the town centre in km | -0.036                | 0.074      | -0.063              | -0.483   | 0.630       |
| Number of reviews in Booking.com    | 0.005                 | 0.002      | 0.349               | 2.648    | 0.010       |
| Preferred Hotels Programme          | 0.099                 | 0.229      | 0.056               | 0.430    | 0.668       |
| Parking available                   | 0.056                 | 0.509      | 0.011               | 0.109    | 0.913       |
| Free WiFi                           | 0.917                 | 0.461      | 0.202               | 1.989    | 0.050       |
| Fitness                             | 0.079                 | 0.197      | 0.046               | 0.402    | 0.689       |
| Spa                                 | -0.197                | 0.226      | -0.115              | -0.871   | 0.386       |
| Swimming pool                       | -0.288                | 0.179      | -0.221              | -1.606   | 0.112       |
| Ski equipment rental                | -0.058                | 0.198      | -0.034              | -0.293   | 0.770       |
| Free breakfast                      | -0.082                | 0.209      | -0.044              | -0.390   | 0.698       |
| HB or FB online options             | -0.159                | 0.307      | -0.056              | -0.516   | 0.607       |
| All inclusive                       | 0.658                 | 0.674      | 0.103               | 0.977    | 0.331       |
| Room service                        | -0.159                | 0.223      | -0.092              | -0.714   | 0.477       |
| Business centre                     | 0.179                 | 0.292      | 0.074               | 0.614    | 0.541       |
| Animation                           | 0.188                 | 0.378      | 0.050               | 0.497    | 0.620       |
| Babysitting/child care services     | 0.091                 | 0.216      | 0.051               | 0.422    | 0.674       |
| Non-smoking rooms                   | 0.232                 | 0.198      | 0.122               | 1.168    | 0.246       |
| Rooms for disabled                  | -0.350                | 0.244      | -0.167              | -1.433   | 0.155       |
| R                                   | 0.522                 |            |                     |          |             |

|                                |        |
|--------------------------------|--------|
| R <sup>2</sup>                 | 0.272  |
| Adjusted R <sup>2</sup>        | 0.088  |
| N                              | 110    |
| Standard error of the estimate | 0.8168 |
| Durbin-Watson                  | 1.776  |

Finally, the regression results in Table 5 clearly show that hotel's tangible facilities and services do not influence its online rating, leading to a negative response to RQ5. None of the facilities and services (with one exception) has a statistically significant impact on hotel's Booking.com total rating. Similar to the findings of Bulchand-Gidumal, Melián-González. & López-Valcárcel (2011) our results indicate that free Wi-fi can significantly increase the online rating of the hotel. The very low explanatory power of the regression model (it explains less than 9% of the variations of the dependent variable) confirms that hotel's Booking.com total ratings does not depend on its tangible facilities and offered services. Therefore, hoteliers should look not *whether* they provide the particular facility / offer the service, but *how* they deliver it. In a similar vein, Hensens (2014) stresses that conventional rating systems (like the hotel's official star category in Bulgaria) emphasise the objective tangible criteria ('what is offered') while online ratings based on online reviews emphasise the service delivery criteria ('how it is delivered'). In this regard it is not surprising that the online ratings of hotels in Bansko are not influenced by the tangible product characteristics.

## Conclusion

This short research note analysed the online ratings of hotels in Bansko, Bulgaria, in two major systems – Booking.com and TripAdvisor. Table 6 summarises the answers to the five research questions.

**Table 6.** *Research questions results*

| <b>Research question</b>  | <b>Answer</b> |
|---|---------------|
| RQ1: Are the various online ratings of hotels in different websites correlated? | Yes           |
| RQ2: Does the number of reviews of a hotel influence its online rating?         | Yes           |
| RQ3: Does hotel's category influence its online rating?                         | Yes           |
| RQ4: Does hotel's size influence its online rating?                             | Yes           |
| RQ5: Do hotel's facilities and services influence its online rating?            | No            |

From a managerial perspective findings indicate that hotel managers must stimulate their guests to write reviews about their stay because the number of reviews is positively correlated to the rating of the hotel in both Booking.com and TripAdvisor. The more reviews a hotel has, the higher the probability of positive reviews and the higher the rating. Findings further reveal that higher category does not necessarily mean higher online rating of the hotel – hoteliers must match and exceed the expectations of the guests about a lodging product from a particular category. 'Cutting edges' would be

recognised by guests and they would punish the hotel with lower ratings. Finally findings indicate that hotel's facilities and offered services are practically irrelevant to its rating – intangible product elements like atmosphere and guest-staff relations might be more important for guests' evaluations in the two systems.

The research is not without limitations. It uses only one location with specific characteristics (ski resort in an Eastern European transition economy). Further research in other empirical settings might deliver different results.

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