# Towards More and Better: Geographical Factors of Hotel Online Ratings

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**Abstract**

**Aim**:The aim of this enquiry is to determine the impact of various geographical factors on the rating and popularity of hotels in selected social media The criteria for the selection of mentioned social media were their popularity and the ability to rate the hotel by the guests. The analysedsocial media channels include: Booking.com, Facebook, GoogleMaps, TripAdvisor, and Trivago.

**Methods**: This research was conducted for all 193 star-ranked hotels operating in July 2017, in Central Poland. However, analysis covered only those of establishments which were using all considered online reviews' sources (118 star-ranked hotels). To achieve the research goal, 15 semilogarithmic models were estimated to explain the variability of: 1) the number of hotel reviews in social media, 2) average hotel ratings in social media, and 3) the multiply effect of investigated number and average value of hotel ratings in social media; separately for each type of analysed social media. Following geographical explanatory variables were considered: 1) type of location (urban or rural), 2) distance from closest transport nodes (road, rail and air), 3) distance to the nearest tourist attractions, 4) distance from the nearest administrative centre, 5) distance from nearest competing hotels. The hotel star rank was a control variable included in the study.

**Results**:Proximity to the transportations hubs and to the competitors were found as the most significant geographical factors influencing number of online rates posted in social media channels of hotel services offered in Central Poland.Receiving substantial number of positive reviews is easier when operating as a hotel with better access to transport network, and benefitted by agglomerative effects.

**Practical implication**: Social media management is currently one of the key areas of marketing communication run by hotel enterprises.This article should make those who are responsible for managing social media in business practice, more focus on the geographical context.

**Key Words**: *Hotel; Online reviews; Geographical factors.*

## 1. Introduction

Nowadays, information technologies influence how the world, communities, relationships or people are perceived, what leading to cultural and social reorganization (Baym, 2017; Serra Cantallops & Salvi, 2014). Many purchase decisions are supported by the Internet, particularly by different types of social media. Social media are defined as a group of applications operating on the basis of network technologies, allowing the creation and exchange of content generated by their users (Kaplan & Haenlein, 2010). Social media are web-based or mobile technologies which enhance human communication and let for dynamic, interactive dialogues. They can change content very quickly and with little control (Power & Phillips-Wren, 2011). Currently we are the witnesses of Internet based messages explosion. Harrysson, Metayer and Sarrazin (2012) noticed that social media creates a totally new information map. Kaplan and Haenlein (2010) identified six different groups of social media: collaborative projects, blogs and microblogs, content communities, social networking sites, virtual game worlds, and virtual social worlds.

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The Internet has opened new pathways of distribution channels in tourism sector (Berné, García-González, García-Uceda, & Múgica, 2015; Lien, Wen, Huang, & Wu, 2015). The role and significance of social media, in tourism industry as well, is becoming more and more important and allows the industry for development bases on the content generated by the users of various websites (Hoong, Yusoff, Zainol, & V, 2018). The Internet and social media have changed channels for the dissemination of travel information and allowed tourists to share the experience and knowledge freely (Munar & Jacobsen, 2014). The Internet has now become the main source of information on tourism industry services. In particular, various types of opinions and assessments could be extremely valuable (Sweeney, Soutar, & Mazzarol, 2008). However, the most reliable and useful opinions seem to be those which are verified if their author actually bought and consumed the services (Casaló, Flavián, Guinalíu, & Ekinci, 2015).

The electronic word-of-mouth (eWOM) has been recognized as one of the most influential information channel (Jalilvand, Esfahani, & Samiei, 2011). The eWOM has solved the main problem of inexperienced tourism demand: lack of valuable and trustable information about characteristics of services in tourist destinations (Browning, So, & Sparks, 2013). For the hoteliers social media could be one of the most appropriate tools for gaining information about the guests and their opinions about the services. In recent years web services which offer online reviews or product ratings have been created (Ladhari & Michaud, 2015). Due to quick growing of international tourists volume, the Internet, social media, and mobile applications have become a key mainstream source of information (Jansson, 2018). Social media enable travellers to share pictures, reviews or descriptions about the hotels which they visited. The tourists can gain many information connected with location, services, atmosphere, neighbourhood, etc. (Hoong et al., 2018). People can become a media themselves thorough sharing information on the Internet. Moreover, social media let the hoteliers understand and respond to customer preferences (Leung, Law, van Hoof, & Buhalis, 2013).

## 2. Literature review

Recently many studies on tourism have adopted the hedonic price models. The examined variables are connected with package tours prices (Alegre, Cladera, & Sard, 2013; Thrane, 2005), prices of tourist services (Falk, 2008; Malasevska & Haugom, 2018) or hotel room prices (Espinet, Saez, Coenders, & Fluvia, 2003; Martin-Fuentes, 2016; Pawlicz & Napierała, 2017; Zhang, Ye, & Law, 2011). Andersson (2010) investigated hotel room process in Singapore, and proved that star-ranked, various club goods general neighbourhood and accessibility characteristics have a significant effect on a hotel price. Schamel (2012) confirmed the hotel star rank is the most significant variable affecting room prices. Abrate and Viglia (2016) agreed that the amount of competitors in real-time determines the price decisions.

Researches of hotel enterprises basing on data from social media are becoming more popular and they are widely discuss in the literature. Geographical factors in the hotel sector are determined as crucial in terms of location, profitability and the price level of services offered by hotels (Lado-Sestayo, Vivel-Búa, & Otero-González, 2018; Napierała & Leśniewska, 2014; Pawlicz & Napierała, 2017). Yang, Wong and Wang (2012) emphasized that the location is one of the most important factors for a new hotel establishment.The main topics of mentioned research are factors affecting the sale of hotel services, which affect the financial results of hotel companies (Blal & Sturman, 2014; Soler, Gemar, & Guzman-Parra, 2019). Viglia, Minazzi and Buhalis (2016) showed a positive impact of online ratings on occupancy rates. In addition, it was determined that the occupancy rate is also influenced by the number of ratings regardless of the average hotel score. Phillips, Zigan, Santos Silva and Schegg (2015) confirmed that poor opinions about the hotel directly affect the prices of offered services. The worse online reviews, the higher guests' expectations regarding the reduction of the room rate are However it should be emphasized that lesser-known hotels are more affected by online reviews than well-known ones (Vermeulen & Seegers, 2009).

The profitability of hotels depends on the structure of the market and popularity of tourist destinations as well. For example in Barcelona's hotel prices are more dependent on external factors such as destination attributes (Soler et al., 2019). Regarding results Torres, Singh and Robertson-Ring (2015), the value of hotel revenues is influenced by their rating in social media, as well as the number of reviews. Serra Cantallops and Salvi (2014) emphasized a great need of investigation how potential customers are influenced by information. Napierała (2018b) revealed that opinions posted in various social media have different impact on prices in hotels of different standards (economic, middle class, and luxury). In case of economy hotels, high ratings are a premium for the use of low prices, however in the case of luxury hotels high ratings are the justification for using higher prices. This is in line with findings from research byMartin-Fuentes (2016)who noticed that better opinion about the hotel justifies the use of higher prices.

For the hotel overall online rating (and at the same time for the possibility of repeated visits) the additional services and facilities in the hotel are the most important (Kim, Li, Han, & Kim, 2017). Moreover the hotel guest rating is influenced by the guest's profile and the image of the place where the hotel is located (Banerjee & Chua, 2016). What is interesting the ratings have a greater impact on the financial results of luxury hotels, and in case of economy hotels the number of reviews is more important (Blal & Sturman, 2014). For economy hotels, the assessment of the quality of services is the most significant determinant of prices, while for luxury hotels: the location and quality of services (Zhang et al., 2011).

## 3. Methods and research area description

The aim of this article is to determine the impact of various geographical factors on the rating and popularity of hotels in selected social media. The criteria for the selection of social media were their popularity and the ability to evaluate hotel operations by guests. The analysed media include: Booking.com (e-travel agent service, where hotels are evaluated only by actual guests), Facebook (the most general and at the same time popular social media), GoogleMaps (the most popular spatial information service), TripAdvisor (website dedicated to the tourist products assessment, where no confirmation of the use of the service is required in the assessment process), and Trivago (tourist service based on the meta-analysis of resources from other social media).
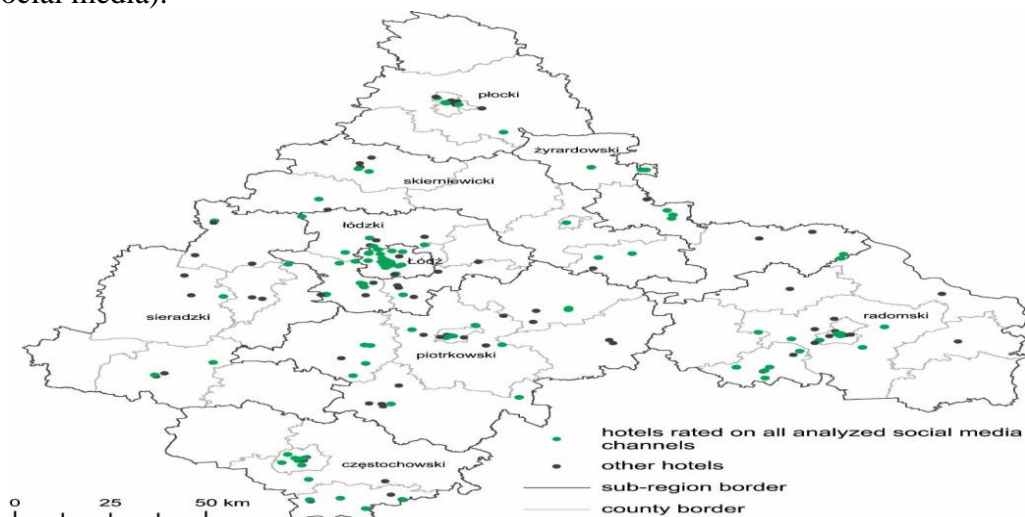


**Figure 1:** Star-ranked hotels localized in Central Poland in 2017.

**Source:** own elaboration based on cartographic inventory of hotels localized in Central Poland in June 2017.

The study included all 193 categorized hotels operating in Central Poland in July 2017, within the following statistical subregions: the city of Lodz, and lodzki, piotrkowski, plocki, radomski, sieradzki, skierniewicki and zyrardowski subregions distributed concentrically

around the core city of Lodz. However, the enquiry was limited to 118 entities that used all of the above-mentioned social media (Figure 1).It needs to be explained that since 1999 Poland is divided into 16 regions which referred to geographical or historical regions. They have the self-government authorities elected in general and direct elections. The regions are further divided into counties. The third level of Polish administrative division is municipality. Three different types of municipalities are recognized: urban, rural, or urban-rural (Kulesza, 2002; Wendt, 2001). It must be underlined that subregions refer only to statistical, not administrative division of Poland.

The basic method of collecting data was a cartographic inventory of hotels and a query of the following data sources: 1) The Central List of Hotel Facilities, 2) websites of selected social media: Booking.com, Facebook, GoogleMaps, TripAdvisor and Trivago. As a result of the research, the following data regarding all hotels were obtained: 1) postal address and geographical coordinates of hotel locations used to estimate the distance from: transportation nodes, public administration centres, competitive hotels and tourist attractions, 2) hotel star rank, 3) average value of ratings and number of ratings in particular social media, 4) type of location. In addition, a database of topographical objects (BDOT) of the Main Office of Geodesy and Cartography was used, from which information on the administrative divisions of the country was taken, as well as a list of tourist attractions of the Polish Tourist Organization. Field studies were carried out, in cooperation with students of the tourism and recreation programme at the Faculty of Geographical Sciences of the University of Lodz with the support of the Regional Tourist Organization of the Lodz Region.

In order to achieve the assumed research goal, 15 semilogarithmic models were estimated to explain the variability of: 1) the number of hotel reviews in social media, 2) average hotel ratings in social media, and 3) the multiply effect of investigated number and average value of hotel ratings in social media; separately for each type of analysed social media. Among the geographical explanatory variables, the following were analysed: 1) type of location (urban or rural), 2) distance from the nearest transport hub (road, rail or air), 3) average distance from the 3 nearest tourist attractions, 4) distance from the nearest administrative centre (district town) and 5) the average distance from the 3 closest competitive hotels. The control variable included in the study was the category of hotel.

## 4. Results

Booking.com was recognized as most popular social media channel with reviews of investigated hotels operating in Central Poland (Table 1). Regardless of the social media, hotel services offered in the region of Lodz were rated as good (approximately 80% of the maximum achievable rate). It need to be underlined that the main focus of the hotel industry in the region are business travellers. Thus, most of the investigated entities were located in the cities (approximately 70%). The average distances between the hotels and the tourist focal points (transportation hubs, tourist attractions, administrative centres, or other hotels) were relatively high (between 5 and 9km). However, the dispersions of mentioned values were much more significant. This confirms two types of hotel locations in Central Poland: 1) facilities clustered in focal points of tourist interests, business and administrative centres, well connected to the transportation network, and 2) hotels with peripheral locations.

**Table 1.** Descriptive statistics of investigated variables, both dependent, and independent.

| Variable | Average | Minimum | Maximum | Standard deviation |
|---|---|---|---|---|
| Booking.com, Number of rates | 417.7 | 16.0 | 1902.0 | 449.3 |
| Booking.com, Average rate | 8.3 | 6.7 | 9.3 | 0.5 |
| Facebook, Number of rates | 129.1 | 1.0 | 1334.0 | 176.0 |
| Facebook, Average rate | 4.4 | 1.0 | 5.0 | 0.5 |
| GoogleMaps, Number of rates | 88.8 | 12.0 | 580.0 | 93.2 |
| GoogleMaps, Average rate | 4.1 | 3.1 | 4.7 | 0.4 |

| Variable | Average | Minimum | Maximum | Standard deviation |
|---|---|---|---|---|
| TripAdvisor, Number of rates | 72.7 | 1.0 | 941.0 | 133.1 |
| TripAdvisor, Average rate | 3.9 | 2.5 | 5.0 | 0.5 |
| Trivago, Number of rates | 269.7 | 21.0 | 1397.0 | 296.4 |
| Trivago, Average rate | 80.9 | 72.0 | 91.0 | 4.0 |
| Star rank | 2.9 | 1.0 | 5.0 | 0.7 |
| Location characteristic (urban = 1, rural = 0) | 0.7 | 0.0 | 1.0 | 0.5 |
| Distance from the nearest transportation hub (km) | 8.8 | 0.2 | 35.9 | 10.5 |
| Average distance from the three nearest tourist attractions (km) | 6.4 | 0.1 | 29.2 | 6.1 |
| Distance from the nearest county town (km) | 5.8 | 0.0 | 34.8 | 6.3 |
| Average distance from the three nearest hotels (km) | 5.0 | 0.3 | 30.2 | 5.2 |

**Source:** own elaboration based on cartographic inventory of hotels localized in Central Poland in June 2017.

Hotel clusters and the spatial concentration of the opinions about accommodation services posted in social media were diagnosed in the biggest cities of Central Poland (Figure 2). Most of the online reviews were noticed in the core city of the region – Lodz (54,764 out of 112,905 reviews posted in investigated social media). However, in the city operates 28 out of 118 investigated hotel enterprises. Thus, willingness of tourists visiting biggest city to share the opinions online is much higher related to people travelling to other destinations.
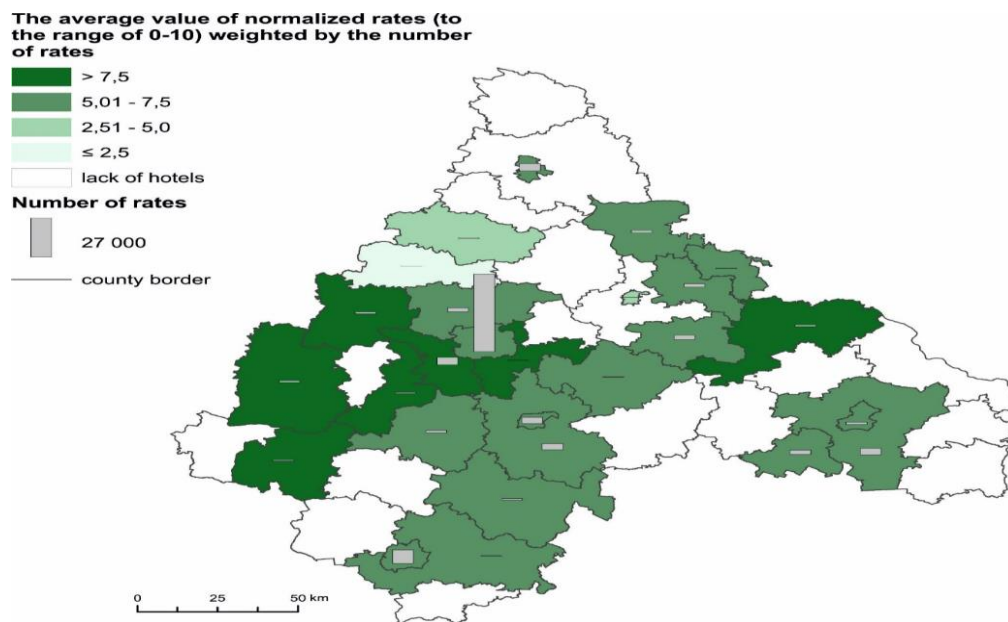


**Figure 2:** Number and average value of normalized online ratings weighted by number of online ratings of investigated hotels localized in counties of Central Poland, published in studied social media.
**Source:** own elaboration based on cartographic inventory of hotels localized in Central Poland in June 2017.

To compare rates posted in various social media channels normalization of the values to the range from 0 to 10 was applied. Regardless of the investigated social media, the highest average rates were noticed in the western part of the region of Lodz. This area is recognized as relatively less attractive regarding preferences of tourists. Thus, demand for hotel services in mentioned destination is affected by the characteristic of the services itself, rather than attractiveness of the location.

Number of hotel reviews posted in social media was influenced mainly by the standard of offered services, as well as transport accessibility of the investigated hotels (Table 2). Variability of number of reviews posted on GoogleMaps were explained by the largest set of significant geographical determinants, including both proximity to transportation hubs, and distance to nearest competitors. It need to be emphasized that GoogleMaps is the only investigated social media channel oriented on spatial user-generated content. However, estimated models explained 13% (GoogleMaps) to 30% (TripAdvisor) of the distribution of hotel reviews quantity.

Impact of hotel star rank on number of reviews posted in social media is significant but varied. Upscale hotels are usually chain affiliated, more experienced in using social media as a marketing communication tool. Every additional starallows the hotel to receive almost 20% of reviews more at Booking.com, and even 85% more at TripAdvisor. However, this disproportion might be partially justified by the substantially different number of reviews posted in mentioned social media channels. Discussed quantity of reviews is also affected by the transport accessibility. Increase of the distance from the hotel to the closes transportation node by 1 km results in decrease of number of reviews by 1–3%, depending on the social media. It can be cautiously concluded that hotels with better access to the transportation network attracted relatively more guests, and indirectly induced higher number of reviews. As mentioned above, in the case of GoogleMaps, quantity of online rates was influenced also by the proximity of competitors. Increase of the average distance from the hotel to three closes competitors by 1km resulted in decrease of number of online reviews by 4%. All presented findings and spatial character of the GoogleMaps content confirmed significance of spatial variety as a determinant of competitive advantage in a hotel industry(Napierała, 2018a).

**Table 2.** Semilogarithmic models estimating volatility of quantity of online ratings of hotels localized in Central Poland, in investigated social media channels.

| Independent variables | Dependent variables | | | | |
|---|---|---|---|---|---|
| | Booking.com | Facebook | GoogleMaps | TripAdvisor | Trivago |
| | Coefficients | | | | |
| Intercept | **** 5.4563 | **** 2.2688 | **** 3.5859 | **** 1.5386 | **** 5.0460 |
| Star rank | * 0.1822 | **** 0.7496 | **** 0.3165 | **** 0.8492 | ** 0.1991 |
| Location characteristic (urban = 1, rural = 0) | 0.1914 | –0.1784 | –0.2305 | –0.0953 | 0.0185 |
| Distance from the nearest transportation hub (km) | **** –0.0264 | –0.0116 | ** –0.0120 | ** –0.0212 | * –0.0141 |
| Average distance from the three nearest tourist attractions (km) | * –0.0374 | 0.0253 | 0.0040 | * –0.0434 | * –0.0388 |
| Distance from the nearest county town (km) | 0.0032 | 0.0183 | 0.0152 | –0.0036 | –0.0109 |
| Average distance from the three nearest hotels (km) | –0.0364 | * –0.0497 | ** –0.0407 | –0.0206 | –0.0244 |
| $R^2$ | 0.2974 | 0.2110 | 0.1272 | 0.3023 | 0.2252 |

**Source:** own elaboration based on cartographic inventory of hotels localized in Central Poland in June 2017. p-values: 0 "****" 0.01 "***" 0.05 "**" 0.1 "*" 0.2

Estimated models explained between 8% (Facebook) to more than 25% (TripAdvisor) of investigated distribution of average values of hotel online rates posted on social media (Table 3). Hotel online rates were determined mainly by the standard of offered services. Every additional starallows the hotel to receive almost 3% better online rates at Trivago, and even 9% better rates at TripAdvisor website. Interestingly, no geographical determinant significantly influenced average hotel online rates, except of the proximity of competing enterprises. Increase of the average distance from the hotel to the three closest competitors by 1 km resulted in

decrease of online rate at TripAdvisor by 1%. This confirms that the proximity of the competitors induces positive perception of hotel services. Hotel guests find the competition as factor stimulating the quality of the hotel services.

**Table 3.** Semilogarithmic models estimating volatility of average value of online ratings of hotels localized in Central Poland, in investigated social media channels.

| Independent variables | Dependent variables | | | | |
|---|---|---|---|---|---|
| | Booking.com | Facebook | GoogleMaps | TripAdvisor | Trivago |
| | Coefficients | | | | |
| Intercept | **** 1.9919 | **** 1.3407 | **** 1.2618 | **** 1.0856 | **** 4.3130 |
| Star rank | **** 0.0421 | ** 0.0395 | **** 0.0476 | **** 0.0863 | **** 0.0261 |
| Location characteristic (urban = 1, rural = 0) | 0.0093 | –0.0161 | 0.0025 | 0.0156 | 0.0089 |
| Distance from the nearest transportation hub (km) | 0.0001 | 0.0014 | 0.0005 | –0.0009 | –0.0001 |
| Average distance from the three nearest tourist attractions (km) | 0.0008 | –0.0011 | 0.0025 | 0.0037 | 0.0003 |
| Distance from the nearest county town (km) | 0.0007 | 0.0001 | –0.0019 | 0.0012 | 0.0005 |
| Average distance from the three nearest hotels (km) | * –0.0026 | 0.0037 | –0.0001 | ** –0.0060 | –0.0016 |
| $R^2$ | 0.2190 | 0.0834 | 0.1783 | 0.2523 | 0.1574 |

**Source:** own elaboration based on cartographic inventory of hotels localized in Central Poland in June 2017.
**p-values:** 0 "****" 0.01 "***" 0.05 "**" 0.1 "*" 0.2

Last set of models was estimated to describe the impact of multiplied effect of quantity and the average value of hotel online rates posted in social media channels identified for enterprises in Central Poland (Table 4). Volatility of mentioned phenomenon was explained between 15% (GoogleMaps) and almost 33% (TripAdvisor). It should be emphasized that hotel star rank was found as most significant factor determining multiplied effect of number and value of online rates. Better star rank implied increase of both number of online rates and their average value. Transport accessibility and proximity to the competitors were found as significant geographical determinants of investigated dependent variable. Impact of both predictors was recognized as stimulating. Increase of the distance from hotels to transportation nodes and closest competitors resulted in the decrease of the multiplied effect of quantity and the average value of hotel online rates. Receiving substantial number of positive reviews is easier when operating as a hotel with better access to transport network, and benefitted by agglomerative effects.

**Table 4.** Semilogarithmic models estimating volatility of multiplied effect of quantity and average value of online ratings of hotels localized in Central Poland, in investigated social media channels.

| Independent variables | Dependent variables | | | | |
|---|---|---|---|---|---|
| | Booking.com | Facebook | GoogleMaps | TripAdvisor | Trivago |
| | Coefficients | | | | |
| Intercept | **** 7.4481 | **** 3.6095 | **** 4.8476 | **** 2.6242 | **** 9.3591 |
| Star rank | * 0.2243 | **** 0.7891 | **** 0.3640 | **** 0.9355 | * 0.2252 |
| Location characteristic (urban = 1, rural = 0) | 0.2006 | –0.1945 | –0.2280 | –0.0796 | 0.0273 |

| Independent variables | Dependent variables | | | | |
|---|---|---|---|---|---|
| | Booking.com | Facebook | GoogleMaps | TripAdvisor | Trivago |
| | Coefficients | | | | |
| Distance from the nearest transportation hub (km) | **** –0.0262 | –0.0102 | * –0.0115 | ** –0.0221 | * –0.0142 |
| Average distance from the three nearest tourist attractions (km) | * –0.0366 | 0.0242 | 0.0064 | –0.0397 | * –0.0385 |
| Distance from the nearest county town (km) | 0.0039 | 0.0184 | 0.0133 | –0.0024 | –0.0103 |
| Average distance from the three nearest hotels (km) | * –0.0390 | –0.0461 | ** –0.0408 | –0.0266 | –0.0260 |
| $R^2$ | 0.3004 | 0.2117 | 0.1472 | 0.3274 | 0.2286 |

**Source:** own elaboration based on cartographic inventory of hotels localized in Central Poland in June 2017.
**p-values:** 0 "****" 0.01 "***" 0.05 "**" 0.1 "*" 0.2

## 5. Conclusions and discussion

It is worth to emphasized that the estimated models explained the variability of the examined number and the average value of ratings in social media to a small extent. Therefore, it can be concluded that the location choice determines the use of a specific accommodation service, but it does not affect the quality assessment. It agreed Aksoy and Yetkin Ozbuk (2017) who found that the location of the hotel is one of the most important categories of hotel choice by consumers.

However, it is possible to look at the phenomenon from the opposite side. Operating in a more attractive location does not absolve the hoteliers from the care of the quality of the offered services and from the customers' perspective is not an excuse for services offered in insufficient quality. As Kościółek (2017) noticed prices of hotel services depend primarily on the location of the hotel and on the assessment of comfort.

It is interesting that the models with the highest coefficients of determination, regardless of the explained variables, were obtained in the case of TripAdvisor and Booking.com websites. It should be emphasized that these are the media dedicated to tourists, for whom the geographical context is by definition much more important than in the case of other Internet users, as confirmed by research obtained by Casaló et al. (2015).

Among the variables explaining the number of hotel service ratings in central Poland made in social media, the most important geographic factor analysed was transport accessibility, and then the proximity of the competition. It seems that both factors directly determine the attractiveness of hotels, and indirectly influenced the number of opinions issued about hotels on social media. The study did not diagnose statistically significant geographical determinants of the average amount of hotel ratings published on social media. The exception was the positive impact of the competing facilities proximity on the assessed average rating. It can be cautiously claimed that the proximity of competition stimulates a more favourable reception of the quality of services offered by the hotel. The spatial context of competition is a factor stimulating the quality of hotel services for clients. Social media management is currently one of the key areas of marketing communication run by hotel companies. This article should sensitize those responsible for managing social media in business practice on the geographic context of operations.

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