

## Hotel online pricing policy: A review and a regional case study

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**ABSTRACT:** This paper provides a literature review on hotel online pricing policy. The review covers pricing strategies from three different perspectives: demand, supply and regional characteristics. From the demand side, the reviewed literature shows that electronic word-of-mouth (e-WOM) influences hotel room revenue and overall performance. Also, e-WOM represents key information for hotel managers to understand customers' needs as well their degree of satisfaction and loyalty. Notably, reputation, built on online customers' reviews, has an increasing role in online pricing policy. On the supply side, research is still scarce and mostly anchored to the standard competition framework. The review reveals that hotel pricing strategy requires more innovation within a rather volatile and dynamic online market. Besides, through a statistical analysis, this paper generalizes further the finding that hotel online pricing policy is highly influenced by overall accessibility to and mobility within a region.

**JEL Classification:** L83; R32; R1.

**Keywords:** hotel; demand; supply; regional characteristics; online pricing policy.

### **Política *online* de precios del sector hotelero: una revisión y un caso de estudio regional**

**RESUMEN:** Este artículo proporciona una revisión de literatura sobre la política de precios *online* del sector hotelero. La revisión comprende estrategias de precios desde tres perspectivas diferentes: demanda, oferta y características regionales. Desde el punto de vista de la demanda, la literatura revisada muestra que el boca a boca electrónico (denominado e-WOM) influye en los ingresos por habitación y también en el desempeño global. Además, el e-WOM se convierte en información clave para que los gerentes de los hoteles comprendan mejor las necesidades de los clientes, además de permitirles conocer su grado de satisfacción y lealtad. De manera notable, la reputación, basada en las opiniones de los clientes, tiene un papel cada vez mayor en la política de precios *online* de los hoteles. Desde el punto

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de vista de la oferta, son bastante escasas las investigaciones existentes y, en su gran mayoría, están ancladas en el marco de referencia estándar de la competitividad. La revisión realizada revela que la estrategia de precios *online* de los hoteles requiere de una mayor innovación, dentro de un mercado *online* dinámico que presenta cierta volatilidad. Además, a través de un análisis estadístico, este artículo generaliza aún más el hallazgo de que la política *online* de precios del sector hotelero está altamente influenciada por la accesibilidad general y la movilidad dentro de una región.

**Clasificación JEL:** L83; R32; R1.

**Palabras clave:** hotel; demanda; oferta; características regionales; política de precios *online*.

## 1. Introduction

Academic papers are more and more devoted to investigate hotel online pricing policy. The research is starting to build new frameworks to better understand the dynamic of online prices in the tourism activity, based on the characteristics of the classical forces, demand and supply, as well as on the geographical location of the hotels.

The purpose of this paper is to provide a literature review on this thread of research. One of the objectives is to investigate in what measure demand, supply as well as regional characteristics, such as accessibility and mobility, influence online pricing strategies. The search on the relevant literature was based on peer-reviewed economics journals, with a specific focus on tourism journals. To this aim, well-established search engines have been used such as ISI, WebScience, Scopus, Google Scholar.

From a demand perspective, numerous studies are devoted to investigate the role of consumers' word-of-mouth in the hospitality sector. Such a traditional communication has further expanded by the introduction of the communication technology. Consumers tend to read, use and post information on the internet either *ex-ante* or *ex-post* of their purchase or experience. This posted information is defined as electronic Word-of-Mouth (e-WOM, see for example Buhalis and Law, 2008). The impact of e-WOM on customers' preferences and their willingness to pay is more remarkable for the service sector. The intangible and experiential nature of services increases the degree at which customers perceive risk in their consumption. Therefore, consumers tend to search more information from previous customers who have actually experienced a specific service (Papathanassis and Knolle, 2011).

Nowadays, it is well established that the popularity of search and release of information when shopping online encourages customers to rely on these sources of online information before proceeding with the purchase. Customers' preferences of a specific product are highly and positive correlated to the number of online reviews (Viglia *et al.*, 2014). In this respect, as a typical service industry, hotels rely on e-WOM as one of the key marketing channels that influences their business profitabil-

ity. In fact, e-WOM represents a significant information source for hotel managers to understand customers' needs and preferences and, hence, it becomes a powerful tool to enhance the quality of the supplied services (Phillips *et al.*, 2017). Price dynamics tend to be also closely correlated to short-run and long-run hotel performance (Kim *et al.*, 2016). Hotels have to closely evaluate their online reputation as a means for adopting pricing strategies that, ultimately, will influence their competitiveness and, hence, the economy of regions and destinations.

On the supply side, research is still scarce and mostly anchored to the standard competition-oriented framework. A literature review proposes novel studies that have attempted to analyse in what manner hotel online pricing policy adjusts not only to demand shocks, but also to online market competition and innovation.

As a final aim of the paper, a statistical analysis is pursued to further generalize previous work that assessed the impact of geographical characteristics, in terms of accessibility and mobility, on online pricing policy set by hotels (Alegre *et al.*, 2013; Costa, 2013; Yang *et al.*, 2018a; Yang *et al.*, 2017). A representative sample of online hotels based in the Italian region of Sardinia is analysed. To this aim, data on single and double room prices, set both in the low and high season, are retrieved from *Booking.com*.

The paper is organized in the following manner. The next section offers a literature review on online tourism demand and its effects on hotels profitability and pricing policy. Section 3 presents a literature review on the role of supply and innovation in setting pricing strategies. In Section 4, the role of regional characteristics on online pricing policy are highlighted and a statistical investigation is presented as a case study. In the last section concluding remarks are drawn.

## **2. Tourism demand**

### **2.1. Consumers' motivations and expectations: E-WOM and hotels profitability**

Through the analysis of several research papers, it is possible to identify the key factors that lead users to provide a review on purchased tourism services. As main reasons in providing reviews by consumers, most of the studies, here analyzed, highlight aspects such as «quality of service», «customer satisfaction and dissatisfaction» and «social identity and sense of belonging to the community» (Crotts *et al.*, 2009; Swanson and Hsu, 2009; Kim *et al.*, 2009; Casaló *et al.*, 2010; Sun and Qu, 2011; Sánchez-García and Currás-Pérez, 2011; Nusair *et al.*, 2011; Bronner and Hoog, 2011; Casalo *et al.*, 2015; Gvili and Levy, 2016; Zervas *et al.*, 2017; Yen *et al.*, 2019; Yang, 2018b).

According to Bronner and Hoog (2011), the most frequent motivation to perform e-WOM is to provide useful information to allow others to make a satisfactory choice. Furthermore, some of the research findings reveal that negative reviews can be en-

countered more often than positive reviews. Yet, Swanson and Hsu (2009) argue that customers, who have experienced satisfying experiences, are not necessarily inclined to recommend the service or to persuade others to use the same services. In this line of research, Sánchez-García and Currás-Pérez (2011) adopt an unusual perspective in the literature by proposing that dissatisfaction, caused by perceived service failure, tends to trig for emotional processes that lead consumers to experience and manifest through their reviews specific emotions such as anger, disappointment which, in turn, may induce agents' behavioural response. Potential consumers are then inclined to spread a negative e-WOM, probably with the purpose of warning others and inducing them to be more aware about their choice.

In terms of consumers' emotional involvement, Hu and Kim (2018) examine the effects of e-WOM motivations on customers' e-WOM behaviour. The authors reveal important implications for the hotel sector and online marketing managers. First, self-enhancement and enjoyment is the most important drive for hotel guests to spread positive e-WOM. Moreover, according to the authors, positive online comments are related more to a pleasant stay rather than economic incentives. Hoteliers should ensure that each guest has the opportunity to feel unique thanks to the provision of impeccable services and facilities. A negative experience is the most critical motivational drive for guests to write negative online reviews.

Several studies have also explored the impact that reviews, provided by consumers, have on the hotel sector. Specifically, authors tend to highlight how especially positive judgments can increase the number of bookings and, consequently, the productivity of the firm, thus providing hoteliers with important information for their marketing strategies. Qiang *et al.* (2009) empirically investigate the impact of online consumer-generated reviews on hotel room sales. Utilizing data collected from the largest travel website in China, the authors develop a fixed effect log-linear regression model to assess the influence of online reviews on the number of hotel room bookings. In details, the study shows that positive online reviews can significantly increase the number of bookings, while the variance or polarity of e-WOM (*i. e.* rather volatile judgments or their total absence) exerts a negative impact on the number of online sales. Qiang *et al.* (2011) conduct a further study to identify the impact of online user-generated reviews on business performance, using data extracted from a major online travel agency in China. The empirical findings show that traveller reviews have a significant impact on online sales. Notably, the variable that mostly affects the reservations is related to the average and variance of the judgments.

In addition, Lin and Xu (2017) suggest that reviews not only have an effect on perceived reviewer trustworthiness, but also on brand attitude and purchase intention. A positive review enhances reviewer trustworthiness since it is viewed by potential consumers as being fair and believable, and it can predict a stronger purchase intention while vice versa a negative review. Mauri and Minazzi (2013) also assess that the prevalence of positive/negative comments will increase/decrease the hotel purchase intention and the level of potential consumers' expectations. Blal *et al.* (2014) analyse the tourist market in the city of London, through data on 319 hotels from

*tripadvisor.com*. The results show a positive correlation between the ratings and volume of reviews, and hotels' revenue. Positive reviews generate an increase in sales, while negative reviews generate a decrease. Specifically, ratings have a larger effect on upper-tier hotels, while volume of reviews drives the lower-tier hotels' results.

On the whole, several other studies have identified a link between the volume of reviews and hotels' revenue. Experts have advocated that increasing the volume of online reviews can help mitigate negative comments (Teixeira and Kornfeld, 2013), improve consumer perception (Viglia *et al.*, 2014), and eventually, improve operational performance (Kim *et al.*, 2015). Therefore, as stated by García *et al.* (2017), indicators such as rating and volume are able to influence consumers' willingness to pay.

A further line of research explores in what measure hotel guests reviews, posted on consumer-generated websites, have an influence on consumers' decision-making process and service expectations. Mauri and Minazzi (2013), through survey data gathered on students or young graduates in the main university cities in Northern Italy, reveal a positive correlation between hotel purchasing intention and customers' expectations with respect to the review rating. Moreover, hotel managers' responses to guests' reviews exert a negative impact on customers' purchasing intentions. Tsao *et al.* (2015) show that positive reviews can have a significant effect on booking intentions amongst those individuals who are strongly inclined towards conformity. Conversely, a higher number of reviews prove to be more persuasive amongst those individuals who are characterized by a low degree of conformity. Another thread of research relates to the effects of social networks. In this respect, Ladhari and Michaud (2015) explore the influence of comments published on Facebook on friends' intentions to book a specific hotel, the trust and the attitude towards this hotel, and the perception about its website. A survey conducted on a sample of Canadian students, under the age of 35, has confirmed all the hypotheses on the remarkable influence of such comments that are able to drive users' decision-making process.

There are several studies that show that guests' rating on hotels is a determinant variable that should be considered when implementing pricing policy. Qu (2014) find that the inclusion of additional reviews, obtained from other travel sites, can provide hotels more reliable information for assessing the effect of customers' opinions on business productivity. Torres *et al.* (2015) also explore the impact of a hotel rating and number of reviews on the value generated through online transactions. Through a sample of 178 hotels, representing various types of firms and brands within the United States, the authors assess that ratings in TripAdvisor, as well as the number of reviews, are positively correlated to the average size of each online booking transaction. Hence, regarding e-WOM volume, a large number of comments is desirable only for firms with positive ratings that meet clients' expectations. Indeed, for these firms, the positive effect of rating can be even more strengthened by volume. Therefore, hospitality operators should make an effort to satisfy their clients as well as encourage them to publish online feedback. In this manner, firms' online reputation will increase allowing hotels to raise their prices and obtain a higher profitability for their business.

## 2.2. Demand and pricing policies

On the demand side, several studies find that customers' rating boosts hotel performance and affects hotel room prices (Ogut and Onur Tas, 2012; Lu and Stephenkova, 2012; Nieto *et al.*, 2014; Hernández-Maestro and Muñoz-Gallego, 2014; Viglia *et al.*, 2016b; Guizzardi *et al.*, 2017). Acar *et al.* (2012) remark that hotels need to follow effective and efficient promotional policies based upon effective dynamic pricing strategies. In this respect, Abrate and Viglia (2016) suggest that hospitality operators should adjust their prices in line with reviewers' evaluations about their accommodation. Hence, online reputation, by means of online customers' reviews, plays an increasing role in pricing making decisions.

In terms of dynamic pricing strategy, Viglia *et al.* (2016a) remark that an important indicator is the so-called «reference price». This price is a benchmark that consumers use to evaluate prices on the market and purchase a specific product. In particular, the authors show how pricing and discounting policies affect reference price formation. The more often and the longer hotel room rates are discounted, the more likely the discounted rate becomes the reference price, and the more difficult will be for hotels to recover their reputation and value in consumers' minds. Less mature companies tend to adopt discounts and aggressive pricing tactics in an uncontrolled way. Such companies will jeopardize reference price levels.

A further drive of pricing policy relates to customers' characteristics and clustering. Abrate *et al.* (2012) analyze the dynamic price decisions within the hotel sector. The authors conclude that the inter-temporal pricing structure often depends on a price discrimination policy based on customers' clusters, stars rating, as an indicator of quality, and the number of services supplied. Empirical results show that when customers belong to the business cluster, the lowest prices seem to be set in the time span immediately preceding customer staying. On a weekend, when the leisure cluster is predominant, prices tend to increase when approaching to the check-in date. Wu *et al.* (2014) show that a randomized pricing strategy tends to generate higher profits than a flat pricing strategy. The authors suggest that the online retailer should adopt the discounted price for only one period and then return to the baseline price. When low-type consumers are more patient, the retailer should decrease the promotion frequency and, simultaneously, adopt a high price. Moreover, the online retailer should diminish the promotion frequency and the high price and, simultaneously, increase the low price to encourage high-type consumers, who value time more, to purchase at the high price.

From a standard economics perspective, García *et al.* (2017) remark that hotels tend to implement their pricing strategies based upon forecasted levels of demand, demand price elasticity as well as competitors' prices. Yet, the higher volatility of the online market place makes more and more difficult to make predictions and forecasts demand pattern. The role of pricing policy in online transactions should be able to maximize sellers' profits having in mind consumers' product evaluations (Kim *et al.*, 2009). As suggested by Guo *et al.* (2013a), an appropriate policy of market segmentation developed through an online reservation system would benefit both hotels and

consumers. By reaching an optimal number of demand segments, firms would obtain higher profits, while consumers would gain considerable price discounts. The authors also show that, if the number of demand segments were higher than the optimal size, the profits would decrease, since the extra profit due to the additional segment can not cover the increase in operating costs.

### 3. Supply and online pricing policy

As the standard economics theory suggests, the level of supply influences price dynamics. Prices tend to increase when there is a scarcity of hotels available to book-in in a certain area (Ibrahim and Atiya, 2016). Abrate and Viglia (2016) support that tactical price decisions tend to be influenced by the amount of online real-time competitors. On the same line of research, Balaguer and Pernias (2013) conduct a study on the relationship between the number of competitors and hotel prices in Spain. A higher density of competitors implies, on average, a lower price dispersion. The findings suggest that the entry of a new competitor in the neighbourhood will force a reduction in the optimal level of prices in the area. For midweek days, the effect on price level will be higher if the new entrant offers the same quality of accommodation. The effect of a new hotel on the price level will be also lower at the weekend, where there is a higher proportion of potential consumers. Becerra *et al.* (2013) argue that the degree of local competition mitigates the effect of differentiation on pricing policy; but hotels characterized by higher quality services (expressed in terms of number of stars) can better withstand the entry of new competitors that would impose price cuts. Furthermore, Xie and Kwok (2017) provides insight on the impact of innovators as Airbnb on hotels, in a increasingly competitive hospitality market, driven by ever-changing technology and innovation. The study empirically considers in what measure Airbnb pricing policy affects the performance of nearby hotels through the lens of price difference and price dispersion.

Pricing policy are also influenced by other factors such as the presence of large events and taxation, although the thread of this research is still scarce. As an example, Herrmann and Herrmann (2014) investigate hotel prices in Munich under the influence of the Oktoberfest. In particular, the author analyses how the event affects the daily online price level as well as hotels price differentials. In general, average hotel prices are very volatile over time. Munich hotels tend to set prices according to expected demand and vary prices depending on the day of the week during the event.

Online Travel Agencies (OTA) also play an important role in tourism web marketing via online brokerage agencies (Internet Distribution Systems, IDS). These are portals where consumers can compare different offers, read the reviews and make a reservation. Nowadays, OTA have become a key distribution channel for many hospitality firms providing not only the possibility to hold reservations, but also a higher visibility to hotels. Several papers are devoted to explore the role of OTA in hospitality and tourism research (Guo *et al.*, 2013a; Blal and Sturman, 2014; Ling *et al.*, 2014; Mellinas *et al.*, 2015).

The use of OTA platforms is also a useful tool for monitoring and managing e-WOM (Yang, 2018a, b). Sorzabal *et al.* (2013) remark that IDS are an essential tool for the tourism sector since these provide a flexible way for changing prices at a real time. Raguseo *et al.* (2017) show that hotels listed on multiple OTA are able to boost sales revenue and operating profitability. The authors explore in what manner a higher visibility influences firms' business profitability. They find that those hotels that have chosen to advertise their rooms on a higher number of OTA are able to boost sales and business profitability and, thus, capture more economic value from their visibility on these distribution channels. On the opposite, the authors show that visibility on TripAdvisor in the form of either higher review ratings, larger review volumes, and higher variance in ratings and hoteliers' responses has no significant effect on revenue and business profit growth. As a further outcome, Xiang *et al.* (2017) indicate that, within the hotel sector, TripAdvisor is widely perceived as a leader as a data source due to the number of reviews available, a wide distribution of customers' preferences, an adequate length of consumer reviews together with support and reputation.

In the hospitality sector, revenue management has advanced significantly in recent decades and is recognized to have an important impact on dynamic pricing techniques (Melis and Piga, 2017). Oses *et al.* (2016) remark that monitoring the performance of a destination is essential for effective destination management. As the hotel sector is one of the main destination management stakeholders, it is important to have an agile monitoring system to evaluate its performance. Amongst others, Rodríguez and Ballesteró (2017) suggest that to positively influence customer perceptions, hotel businesses should develop revenue management practices. Management strategies, if applied in an adequate manner, may induce buyers' perception of fair treatment with respect to the set prices. Yet, the authors argue that only large and chain-affiliated hotels can afford a specialized revenue management software and expertise. In this respect, Ivanov and Ayas (2017) investigate the revenue management practices of accommodation establishments in Turkey through a survey of 105 managers. The findings indicate that, in general, hoteliers do not have a revenue management system that is usually under the responsibility of a general manager, front office manager or marketing manager. Revenue management practices are mostly adopted by high category, chain affiliated, urban and seaside hotels with large number of rooms. Melis and Piga (2017) find that 4-5 star online hotels, with respect to lower star firms, are characterized by a more dynamic pricing policy where a revenue management system plays an important role. Yet, the authors emphasise that the introduction of such a system does not depend necessarily on financial constraints, rather than by lack of technological skills as well as by the firm organization and culture.

#### **4. Regional characteristics and online pricing policies**

Firms' geographical characteristics also play an important role in setting a pricing policy (Phillips *et al.*, 2015; Yang *et al.*, 2017). Yang *et al.* (2018a) investigate the

influence on hotel prices by market accessibility as well as by various quality-signalling factors, such as online ratings, recommendation percentage, hotel typology, chain affiliation. The study indicates that often low market accessibility (e.g. high flight costs; scarce mobility) leads to lower prices, although such an influence tends to be mitigated by a well-established reputation gained through the high quality-signalling factors.

Xun and Yibai (2016) find that the determinants that lead to customers' satisfaction or dissatisfaction toward hotels are often specific to particular types of hotels. The authors highlight that the determinants of satisfaction are generally the same for all the different types of structure (*i. e.* location and accessibility, staff performance and empathy, quality of rooms and restaurant). Dissatisfaction factors are instead more various for each type of hotel, compared to those that drive satisfaction. These include elements such as environmental issues, slow Wi-Fi, poor quality restaurants, noise, malfunctioning or old furniture, and staff unfriendly and/or unavailable. For hotels with limited services, environmental issues or noise are more influential as dissatisfactory factors. For hotels characterized by luxurious services, with food and drinks facilities, a dissatisfactory factor is the poor quality of the restaurants. Finally, for luxury hotels, without food and drinks facilities, the poor quality of the room (*i. e.* old furniture and malfunctioning) is the most factor for dissatisfaction.

Location, accessibility and mobility within a region tend also to affect pricing strategies, as shown by Alegre *et al.* (2013). The authors find that a negative relationship between the prices and the distance to the beach for German and British package holidays. A mixed evidence was captured on the relationship between prices and the distance to the centre of the tourist resort: positive for the British tourists, while negative for the German tourists. This assumption is further confirmed by Costa (2013) who argues that prices depend on hotel category, accommodation types as well as on the geographical location.

More recently, Latinopoulos (2018) examines the effect of sea view, together with other structural and location attributes, on room rates. Specifically, the author tests whether rooms with a sea view denote higher prices than other room types, thus quantifying the associated aesthetic and rent value of coastal areas where tourism-related development is a key economic activity. The results indicate that local natural resources tend to have a substantial role in the rent and aesthetic value.

#### **4.1. Accessibility and Mobility: a case study**

The present empirical investigation explores the importance of geographical characteristics in setting online pricing policy by hotels. To this aim, the analysis is run in the region of Sardinia (Italy; see also Biagi and Pulina, 2007; Pulina and Santoni, 2018). The data were extrapolated from the *Booking.com* website in 2017. The overall sample consists of 320 hotels located in five, of the eight, different provinces in the island, with the aim to elicit different levels of tourism specialization, hotel quality (expressed in terms of number of stars) as well as different levels of accessi-

bility and mobility within the region. According to the official statistics, in 2016 there were approximately 2,500 hotels in Sardinia (CRENOS, 2018). Hence, the extracted sample represents the population with a confidence interval of 5% and a confidence level of 95%.

Table 1 provides the main characteristics of the sample. The majority of the hotels, which advertise their business in *Booking.com*, are located in Olbia-Tempio (59.4%).

**Table 1.** Sample characteristics

	<i>N</i>	%
<b>Province</b>		
Olbia-Tempio (North)	190	59.4
Nuoro (Centre-East)	58	18.1
Ogliastra (East)	35	10.9
Carbonia-Iglesias (South-West)	29	9.1
Medio Campidano (West)	8	2.5
<b>Stars</b>		
1 star	2	0.7
2 stars	13	4.3
3 stars	164	54.3
4 stars	109	36.1
5 stars	14	4.6
<b>Location</b>		
Coastal hotels	273	85.3
Non-coastal hotels	47	14.7
Point of sale (Hotel)		
With	313	97.8
Without	7	2.2

This province is characterised by a high tourism specialization built since the '50s of the past century. Besides, the greatest quota of the sample consists of 3-star hotels (54.3%); this outcome is consistent with the most common types of hotels (CRENOS, 2018; see also Mantovani *et al.*, 2017), as driven by past policy issued by the Region (Pulina and Biagi, 2010). As expected, the majority of the hotels are located on the coast (85.3%) and have an own point-of-sale to facilitate transactions *in situ* (POS, 97.8%).

The aim is to explore whether there are statistically significant differences in hotel pricing policy with respect to their location, that is accessibility to the destination and mobility within the island, respectively. In this respect, hotel prices were collected discriminating between the low and the high season, as well as between a single and a double room. An independent sample test is run on the variance and on the mean. Moreover, a bootstrapping, with 1,000 replicas is also run to overcome small sample size issues, yet the findings have proved to be statistically consistent (full results can be provided upon request).

A first independent sample test is run to explore for statistical differences in terms of accessibility (Table 2). In this case, the grouping variable is the province: «Olbia-Tempio», which hosts a main national/international airport and port in the region, versus all «the other provinces» which do not host any main transportation hub.

**Table 2.** Independent sample test: accessibility to the province

		<i>Levene's Test</i> <i>H<sub>0</sub>: equality of variances</i>		<i>t-test</i> <i>H<sub>0</sub>: equality of means</i>		
		<i>F</i>	<i>Sig.</i>	<i>t</i>	<i>df</i>	<i>Sig. (2-tailed)</i>
<b>Single_low season</b> (means; high accessibility: 130 euros; low accessibility: 66)	Equal variances assumed	32,219	.000	5,979	303	.000
	Equal variances not assumed			7,355	225,209	.000
<b>Single_high season</b> (means; high accessibility: 257 euros; low accessibility: 96)	Equal variances assumed	27,050	.000	5,683	303	.000
	Equal variances not assumed			7,139	198,888	.000
<b>Double_low season</b> (means; high accessibility: 142 euros; low accessibility: 80)	Equal variances assumed	37,917	.000	5,839	303	.000
	Equal variances not assumed			7,174	226,615	.000
<b>Double_high season</b> (means; high accessibility: 271 euros; low accessibility: 113)	Equal variances assumed	28,664	.000	5,622	303	.000
	Equal variances not assumed			7,069	197,561	.000

The null hypothesis of equality of variance and equality of means, respectively, can not be accepted in all the cases, at least at the 5% level of significance, implying that there are statistical differences in the pricing strategies adopted by «more accessible» and «less accessible» hotels. In greater details, price differences between a single room, in hotels with high accessibility versus hotels with a low accessibility, reach on average 97% during the low season, and 169% in the high season. For a double room, price differences reach on average 77% during the low season and 139% during the high season.

A second independent sample test is run to assess statistical differences in terms of mobility issues within the island, using as a grouping variable «coastal» versus «non-coastal» hotels (Table 3).

**Table 3.** Independent sample test: mobility within the region

	<i>Levene's Test</i> <i>H<sub>0</sub>: equality of variances</i>		<i>t-test</i> <i>H<sub>0</sub>: equality of means</i>			
	<i>F</i>	<i>Sig.</i>	<i>t</i>	<i>df</i>	<i>Sig.</i> <i>(2-tailed)</i>	
<b>Single_low season</b> (means; coastal: 112 euros; non-coastal: 69)	Equal variances assumed	7,480	.007	2,673	303	.008
	Equal variances not assumed			5,174	182,327	.000
<b>Single_high season</b> (means; coastal: 211 euros; non-coastal: 96)	Equal variances assumed	6,172	.014	2,758	303	.006
	Equal variances not assumed			6,017	273,335	.000
<b>Double_low season</b> (means; coastal: 123 euros; non-coastal: 88)	Equal variances assumed	8,437	.004	2,253	303	.025
	Equal variances not assumed			4,347	180,192	.000
<b>Double_high season</b> (means; coastal: 226 euros; non-coastal: 113)	Equal variances assumed	7,380	.007	2,748	303	.006
	Equal variances not assumed			6,204	294,549	.000

Also in this case, the null hypothesis of equality of variance and equality of means, respectively, can not be accepted in all the cases, at least at the 5% level of significance, implying that there are remarkable differences in the pricing strategies adopted by «coastal» and «non-coastal» hotels. In greater details, price differences between a single room, in coastal and non-coastal hotels, reach on average 61% during the low season, and 119% in the high season. For a double room, price differences reach on average 40% during the low season and 100% during the high season.

## 5. Conclusions

This paper has provided a literature review on hotel online pricing policy, covering three main perspectives: demand, supply and regional characteristics.

From a demand perspective, an in-depth and updated literature review has shown that online reviews, published by customers and viewers, play a significant role within the tourism activity and, especially, on the hotel sector. More and more, hotels rely on e-WOM because this marketing channel affects room revenue and business profitability. E-WOM is also a significant information source for hoteliers to understand customers' needs. Hence, online reputation plays an increasing role in price decision-making and hospitality operators should adjust prices in accordance to customers' evaluations (Abrate and Viglia, 2016).

On the supply side, research has proved to be still scarce and mostly underpinned to the standard competition framework, as also remarked by Van der Rest *et al.* (2018). The literature review has revealed that hotel pricing strategy would need more innovation able to detect changes within a rather volatile online market. An innovative

pricing system would be based not only on the value perceived by customers, but it would also require a remarkable investment in human skills, able to face the dynamic technical challenges. In this respect, many authors emphasise that hotels would benefit from a revenue management system that, although thought to be costly, especially for medium-low quality hotels, could be implemented by a workforce with higher digital skills, or even within OTA platforms which are having an increasing role both as a marketing channel as well as an important pricing making player (see Melis and Piga, 2017). Besides, through OTA, consumers can not only book their holidays, but also publish their reviews about their direct and indirect experience.

As a final step of the present research, a statistical analysis has been run to test in what measure geographical characteristics, such as accessibility and mobility, play a relevant role in hotel pricing strategies. The region of Sardinia (Italy) has been used as a case study and data, on a sample of representative hotels, were retrieved from Booking.com. These data elicited location heterogeneity and hotel quality and characteristics. The results have indicated the relevant role played by accessibility and mobility in the remarkable price differences, both in terms of products (single versus double rooms) and seasonality (low versus high season). Hence, these empirical findings have generalized further previous research and, especially, the work by Latinopoulos (2018) in terms of sea front rents, and by Yang *et al.* (2018a) in terms of accessibility.

Overall, the literature review has provided a better understanding on the online hotel activity. Amongst possible threads of investigation, future research would further investigate issues such as the impact of technical advances, competition, seasonality, taxation and regulation, impact of events, geographical characteristics, that can shade light on pricing policy adopted within the online hospitality sector.

## 6. References

- Abrate G., Fraquelli G., and Viglia G. (2012): «Dynamic pricing strategies: Evidence from European hotels», *International Journal of Hospitality Management*, 31, 160-168.
- Abrate G., and Viglia G. (2016): «Strategic and tactical price decisions in hotel revenue management», *Tourism Management*, 55, 123-132.
- Acar N., Gullu K., and Karamustafa K. (2012): «Promotional Activity in Hotels: Applications in the Turkey's Region of Capadocia», *Procedia - Social and Behavioral Sciences*, 58, 1027-1036.
- Alegre, J., Cladera, M., and Sard, M. (2013): «Tourist areas: Examining the effects of location attributes on tour-operator package holiday prices», *Tourism Management*, 38, 131-141.
- Algeciras, A. A., and Ballester, P. T. (2017): «An empirical analysis of the effectiveness of hotel Revenue Management in five-star hotels in Barcelona, Spain», *Journal of Hospitality and Tourism Management*, 32, 24-34.
- Balaguer, J., and Pernías, J. C. (2013): «Relationship between spatial agglomeration and hotel prices. Evidence from business and tourism consumers», *Tourism Management*, 36, 391-400.
- Becerra, M., Santaló, J., and Silva, R. (2013): «Being better vs. being different: Differentiation, competition, and pricing strategies in the Spanish hotel industry», *Tourism Management*, 34, 71-79.

- Biagi, B., and Pulina, M. (2007): «Stessa spiaggia stesso mare: turismo, ambiente e qualità della vita», in Punzo, L. F., and Usai, S. (eds.), *L'estate al mare*, Milano: McGraw-Hill.
- Blal, I., and Sturman, M. C. (2014): «The differential effects of the quality and quantity of online reviews on hotel room sales», *Cornell Hospitality Quarterly*, 55(4), 365-375.
- Bronner, F., and Hoog, R. (2011): «Vacationers and e-WOM: who posts, and why, where, and what?», *Journal of Travel Research*, 50(1), 15-26.
- Buhalis, D., and Law, R. (2008): «Progress in information technology and tourism management: 20 years on and 10 years after the internet-the state of eTourism research», *Tourism Management*, 29(4), 609-623.
- Casaló, L., Flavián, C., and Guinalfú, M. (2010): «Determinants of the intention to participate in firm-hosted online travel communities and effects on consumer behavioral intentions», *Tourism Management*, 31, 898-911.
- Casalo, L., Flavian, C., Guinaliu, M., and Ekinci, Y. (2015): «Do online hotel rating schemes influence booking behaviors?», *International Journal of Hospitality Management*, 49, 28-36.
- Cezar, A., and Oğüt, H. (2016): «Analyzing conversion rates in online hotel booking: The role of customer reviews, recommendations and rank order in search listings», *International Journal of Contemporary Hospitality Management*, 28, 286-304.
- Costa, J. C. C. (2013): «Price formation and market segmentation in seaside accommodations», *International Journal of Hospitality Management*, 33, 446-455.
- CRENOS (2018): *Economia della Sardegna, 25.º Rapporto*, Cagliari, CUEC.
- Crotts, J. C., Mason, P. R., and Davis, B. (2009): «Measuring guest satisfaction and competitive position in the hospitality and tourism industry», *Journal of Travel Research*, 48(2), 139-151.
- Ferrer, J. C., Diego, O., and Jorge, V. (2012): «Risk averse retail pricing with robust demand forecasting», *International Journal of Production Economics*, 136, 151-160.
- García, M. N., Gallego, P. A. M., and Benito, O. G. (2017): «Tourists' willingness to pay for an accommodation: The effect of eWOM and internal reference price», *International Journal of Hospitality Management*, 62, 67-77.
- Guo, X., Ling, L., Dong, Y., and Liang, L. (2013a): «Cooperation contract in tourism supply chains: the optimal pricing strategy of hotels for cooperative third party strategic websites», *Annals of Tourism Research*, 41, 20-41.
- Guo, X., Ling, L., Yang, C., Li, Z., and Liang, L. (2013b): «Optimal pricing strategy based on market segmentation for service products using online reservation systems: An application to hotel rooms», *International Journal of Hospitality Management*, 35, 274-281.
- Guizzardi, A., Stacchini, A., and Ranieri, E. (2017): «Best buy: what does it mean in corporate travel?», *Current Issues in Tourism*, 20(2), 129-134.
- Gvili, Y., and Levy, S. (2016): «Antecedents of attitudes toward eWOM communication: differences across channels», *Internet Research*, 26(5), 1030-1051.
- Herrmann, R., and Herrmann, O. (2014): «Hotel room rates under the influence of a large event: The Oktoberfest in Munich 2012», *International Journal of Hospitality Management*, 39, 21-28.
- Hu, Y., and Kim, H. J. (2018): «Positive and negative eWOM motivations and hotel customers' eWOM behavior: Does personality matter?», *International Journal of Hospitality Management*, 75, 27-37.
- Ibrahim, M. N., and Atiya, A. F. (2016): «Analytical solutions to the dynamic pricing problem for time-normalized revenue», *European Journal of Operational Research*, 254, 632-643.
- Ivanov, S., and Ayas, C. (2017): «Investigation of the revenue management practices of accommodation establishments in Turkey: An exploratory study», *Tourism Management Perspectives*, 22, 137-149.
- Kim, T., Kim, W. G., and Kim, H. B. (2009): «The effects of perceived justice on recovery satisfaction, trust, word-of-mouth, and revisit intention in upscale hotels», *Tourism Management*, 30, 51-62.

- Kim, W. G., Lim, H., and Brymer, R. A. (2015): «The effectiveness of managing social media on hotel performance», *International Journal of Hospitality Management*, 44, 165-171.
- Kim, M., Lee, S. K., and Roehl, W. S. (2016): «The effect of idiosyncratic price movements on short- and long-run performance of hotels», *International Journal of Hospitality Management*, 56, 78-86.
- Ladhari, R., and Michaud, M. (2015): «eWOM effects on hotel booking intentions, attitudes, trust, and website perceptions», *International Journal of Hospitality Management*, 46, 36-45.
- Latinopoulos, D. (2018): «Using a spatial hedonic analysis to evaluate the effect of sea view on hotel price», *Tourism Management*, 65, 87-89.
- Lee, S. (2014): «Revisiting the impact of bed tax with spatial panel approach», *International Journal of Hospitality Management*, 41, 49-55.
- Lin, C., and Xu, X. (2017): «Effectiveness of online consumer reviews: the influence of valence, reviewer ethnicity, social distance and source trustworthiness», *Internet Research*, 27(2), 362-380.
- Ling, L., Guo, X., and Yang, C. (2014): «Opening the online marketplace: An examination of hotel pricing and travel agency on-line distribution of rooms», *Tourism Management*, 45, 234-243.
- Lu, W., and Stepchenkova, S. (2012): «Ecotourism experiences reported online: Classification of satisfaction attributes», *Tourism Management*, 33, 702-712.
- Mantovani, A., Piga, C., and Reggiani, C. (2017): «The dynamics of online hotel prices and the EU Booking.com», NET Institute, [www.NETinst.org](http://www.NETinst.org), Working Paper N.17-04, September, 1-43.
- Mariani, M. M., and Borghi, M. (2018): «Effects of the Booking.com rating system: Bringing hotel class into the picture», *Tourism Management*, 66, 47-52.
- Mauri, A. G., and Minazzi, R. (2013): «Web reviews influence on expectations and purchasing intentions of hotel potential customers», *International Journal of Hospitality Management*, 34, 99-107.
- Melis, G., and Piga, C. A. (2017): «Are all online hotel prices created dynamic? An empirical assessment», *International Journal of Hospitality Management*, 67, 163-173.
- Mellinas, J. P., María-Dolores, S. M. M., and García, J. J. B. (2015): «Booking.com: The unexpected scoring system», *Tourism Management*, 49, 72-74.
- (2016): «Effects of the Booking.com scoring system», *Tourism Management*, 57, 80-83.
- Nieto, J., Hernández Maestro, R. M., and Muñoz-Gallego, P. A. (2014): «Marketing decisions, customer reviews, and business performance: The use of the Top rural website by Spanish rural lodging establishments», *Tourism Management*, 45, 115-123.
- Nieto-García, M., Muñoz-Gallego, P., and González-Benito, O. (2017): «Tourists' willingness to pay for an accommodation: the effect of eWOM and internal reference price», *International Journal of Hospitality Management*, 62, 67-77.
- Nusair, K., Parsa, H. G., and Cobanoglu, C. (2011): «Building a model of commitment for Generation Y: an empirical study on e-travel retailers», *Tourism Management*, 32, 833-843.
- Ogut, H., and Onur Tas, B. K. (2012): «The influence of internet customer reviews on the online sales and prices in hotel industry», *Service Industries Journal*, 32(2), 197-214.
- Oses, N., Gerrikagoitia, J. K., and Alzua, A. (2016): «Monitoring and benchmarking the performance of a destination's hotel industry: The case study of Bilbao in 2014», *Tourism Management Perspectives*, 19, 48-60.
- Papathanassis, A., and Knolle, F. (2011): «Exploring the Adoption and Processing of Online Holiday Reviews: A Grounded Theory Approach», *Tourism Management*, 32(2), 215-224.
- Phillips, P., Barnes, S., Zigan, K., and Schegg, R. (2017): «Understanding the impact of online reviews on hotel performance: an empirical analysis», *Journal of Travel Research*, 56(2), 235-249.

- Phillips, P., Zigan, K., Santos Silva, M. M., and Schegg, R. (2015): «The interactive effects of online reviews on the determinants of Swiss hotel performance: a natural network analysis», *Tourism Management*, 50, 130-141.
- Pulina, M., and Biagi, B. (2010): «The evolution of tourism demand and supply: A regional policy study», *International Journal of Tourism Policy*, 3(3), 237-256.
- Pulina, M., and Santoni, V. (2018): «A two-stage DEA approach to analyse the efficiency of the hospitality sector», *Tourism Economics*, 24(3), 352-365.
- Qiang, Y., Law, R., and Gu, B. (2009): «The impact of online user reviews on hotel room sales», *International Journal of Hospitality Management*, 28(1), 180-182.
- Qiang Y., Law, R., Gu, B., and Chen, W. (2011): «The influence of user-generated content on traveler behavior: An empirical investigation on the effect of e-word-of-mouth to hotel online bookings», *Computers in Human Behavior*, 27(2), 634-639.
- Qu, L., Qiang, Y., and Law, R. (2014): «Moderating effects of product heterogeneity between online word of mouth and hotel sales», *Journal of Electronic Commerce Research*, 15, 1-12.
- Raguseo, E., Neirotti, P., and Paolucci, E. (2017): «How small hotels can drive value their way in infomediaion. The case of 'Italian hotels vs. OTAs and TripAdvisor», *Information & Management*, 54, 745-756.
- Riadh, L., and Michaud, M. (2015): «eWOM Effects on hotel booking intentions, attitudes, trust, and website perceptions», *International Journal of Hospitality Management*, 46, 36-45.
- Rodríguez, A. A., and Ballesteros, P. T. (2017): «An empirical analysis of the effectiveness of hotel Revenue Management in five-star hotels in Barcelona, Spain», *Journal of Hospitality and Tourism Management*, 32, 24-34.
- Sánchez-García, I., and Currás-Pérez, R. (2011): «Effects of dissatisfaction in tourist services: the role of anger and regret», *Tourism Management*, 32, 1397-1406.
- Sorzabal, A., Gerrikagoitia, J. K., and Manzanera, E. T. (2013): «Opening and closing Internet booking channel for hotels. A first approximation», *Tourism Management Perspectives*, 5, 5-9.
- Sun, L. B., and Qu, H. (2011): «Is there any gender effect on the relationship between service quality and word-of-mouth?», *Journal Travel Tourism Marketing*, 28, 210-224.
- Swanson, S. R., and Hsu, M. K. (2009): «Critical incidents in tourism: failure, recovery, customer switching, and word-of-mouth behaviors», *Journal Travel Tourism Marketing*, 26, 180-194.
- Teixeira, T., and Kornfeld, L. (2013): «Managing Online Reviews on TripAdvisor», *Harvard Business School Publishing*, Boston, MA HBS, No. 514-017.
- Torres, E. N., Singhb, D., and Robertson-Ringb, A. (2015): «Consumer reviews and the creation of booking transaction value: Lesson from the hotel industry», *International Journal of Hospitality Management*, 50, 77-83.
- Tsao, W.-C., Hsieh, M.-T., Shih, L.-W., and Lin, T. M. Y. (2015): «Compliance with eWOM: The influence of hotel reviews on booking intention from the perspective of consumer conformity», *International Journal of Hospitality Management*, 46, 99-111.
- Van der Rest, J. P., Roper, A., and Wang, X. L. (2018): «Why is a change of company pricing policy so hard to implement», *International Journal of Hospitality Management*, 69, 30-40.
- Viglia, G., Furlan, R., and Ladrón-de-Guevara, A. (2014): «Please, talk about it! When hotel popularity boosts preferences», *International Journal of Hospitality Management*, 42, 155-164.
- Viglia, G., Mauri, A., and Carricano, M. (2016a): «The exploration of hotel reference prices under dynamic pricing scenarios and different forms of competition», *International Journal of Hospitality Management*, 52, 46-55.
- Viglia, G., Minazzi, R., and Buhalis, D. (2016b): «The influence of e-word-of-mouth on hotel occupancy rate», *International Journal of Contemporary Hospitality Management*, 28(9), 2035-2051.

- Wo, J., Xu, L., and Xu, L. D. (2014): «A randomized pricing decision support system in electronic commerce», *Decision Support Systems*, 58, 43-52.
- Wu, J., Li, L., and Xu, D. (2014): «A randomized pricing decision support system in electronic commerce», *Decision Support Systems*, 58, 43-52.
- Xiang, Z., Du, Q., Ma, Y., and Fan, W. (2017): «A comparative analysis of major online review platforms: Implications for social media analytics in hospitality and tourism», *Tourism Management*, 58, 51-65.
- Xie, K. L., and Kwok, L. (2017): «The effects of Airbnb's price positioning on hotel performance», *International Journal of Hospitality Management*, 67, 174-184.
- Xun, X., and Yibai, L. (2016): «The antecedents of customer satisfaction and dissatisfaction toward various types of hotels: A text mining approach», *International Journal of Hospitality Management*, 55, 57-69.
- Yang, Y., Mueller, N. J., and Croes, R. R. (2018a): «Market accessibility and hotel prices in the Caribbean: The moderating effect of quality-signaling factors», *Tourism Management*, 56, 40-51.
- Yang, Y., Park, S., and Hu, X. (2018b): «Electronic word of mouth and hotel performance: A meta-analysis», *Tourism management*, 67, 248-260.
- Yang, Z., Xia, L., and Cheng, Z. (2017): «Performance of Chinese hotel segment markets: Efficiencies measure based on both endogenous and exogenous factors», *Journal of Hospitality and Tourism Management*, 32, 12-23.
- Yen, C. L. A., and Tang, C. H. H. (2019): «The effects of hotel attribute performance on electronic word-of-mouth (eWOM) behaviors», *International Journal of Hospitality Management*, 76, 9-18.
- Zervas, G., Proserpio, D., and Byers, J. W. (2017): «The rise of the sharing economy: Estimating the impact of Airbnb on the hotel industry», *Journal of Marketing Research*, 54, 687-705.

## Appendix A

**Table 1.A.** Literature review (2017-2018)

<i>Authors</i>	<i>Journal</i>	<i>Aims</i>
Hu and Kim (2018)	<i>International Journal of Hospitality Management</i>	The study examined the effects of eWOM motivations on customers' eWOM behavior in the hotel setting.
Yang, Y., Park, S., Hu, X. (2018b)	<i>Tourism management</i>	The study synthesizes existing empirical results about the relationship between electronic word of mouth (eWOM) and hotel performance via meta-analysis.
Yen, C., Tang, C. (2019)	<i>International Journal of Hospitality Management</i>	The authors investigated the salient predictors for each individual eWOM behavior with an emphasis on hotel attribute performance.
Latinopoulos, D. (2018)	<i>Tourism management</i>	To test whether rooms with a sea view are priced higher than others, thus trying to quantify the associated aesthetic values of coastal areas where tourism-related development is a key economic activity.
Van der Rest, J. P., Roper, A., Wang, X. L. (2018)	<i>International Journal of Hospitality Management</i>	To analyze the process of changing a competition-oriented room rate pricing approach into a company wide value-based pricing process from the perspective of the resource-based view.
Phillips, P., Barnes, S., Zigan, K., Schegg, R. (2017)	<i>Journal of Travel research</i>	To investigate the valence of online reviews and modeling hotel attributes and performance.
Lin, C. A., Xu, X. (2017)	<i>Internet research</i>	To show that review rating, reviewer ethnicity and social distance have a significant effect on perceived reviewer trustworthiness, and only review valence has an influence on brand attitude and purchase intention toward a product evaluated by online consumer reviewers.
M. N., Gallego, P. A. M., and Benito (2017)	<i>International Journal of Hospitality Management</i>	To understand the determinants of consumers' willingness to pay.
Xie, K. L., Kwok, L. (2017)	<i>International Journal of Hospitality Management</i>	The study examined the relationship between the price positioning of Airbnb listings, measured in price difference between a hotel property and the nearby Airbnb listings as well as price dispersion among these Airbnb listings, and the performance of nearby hotels.
Raguseo, E., Neirotti, P., Paolucci, E. (2017)	<i>Information &amp; Management</i>	To verify and discuss how OTAs and TripAdvisor can generate and capture value in the vertical chain of the travel industry.

<i>Authors</i>	<i>Journal</i>	<i>Aims</i>
Zervas, G., Proserpio, D., Byers, J. W. (2017)	<i>Journal of Marketing Research</i>	The authors explore the economic impact of the sharing economy on incumbent firms by studying the case of Airbnb, a prominent platform for short-term accommodations.
Xiang, Z., Du, Q., Ma, Y., Fan, W. (2017)	<i>Tourism management</i>	The study comparatively examines three major online review platforms, namely TripAdvisor, Expedia, and Yelp.
Yang, Z., Xia, L., Cheng, Z. (2017)	<i>Journal of Hospitality and Tourism Management</i>	The paper provides a conceptual understanding of the influence of regional factors on hotel development.
Rodríguez, A. A., Ballesteros, P. T. (2017)	<i>Journal of Hospitality and Tourism Management</i>	The paper aims at assessing the level of application of Revenue Management in five-star hotels in Barcelona.
Melis, G., Piga, C. A. (2017)	<i>International Journal of Hospitality Management</i>	The article investigates whether the presence of dynamic pricing provides a realistic description of hotels' online pricing behavior.
Ivanov, S., Ayas, C. (2017)	<i>Tourism management perspectives</i>	This exploratory research paper investigates the revenue management practices of accommodation establishments in Turkey through a survey of 105 managers.
Guizzardi, A., Stacchini, A., Ranieri, E. (2017)	<i>Current Issues in Tourism</i>	To analyse price trajectories, finding dynamic pricing strategies

