AirBnB Competition and Hotels' Response: The Importance of Online Reputation

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AirBnB and other similar platforms are changing the market structure of the accommodation industry, threatening the status quo of the traditional hospitality industry. This is a new paradigm in which low cost accommodation options press down prices in an industry with a non-flexible cost structure. This paper analyses the role of quality perceived by customers as a key factor explaining prices differences among hotels. In a context characterized by instant access to past guests' valuations on the Internet, the role of these valuations is compared with the traditional rating system, which is less flexible through time and based in legal standards that vary across countries. According to our empirical research, quality as assessed by past customers increases a firm's capacity to set higher prices, working as a signalling mechanism, including the hotels in the same star category. Managers capable of building a reputation of consistent high quality service will show a higher market power.

Keywords: *hotel pricing, AirBnB, quality perceived, Internet valuation, star rating*

Introduction

The sharing economy has become a relevant topic for scholars interested in different industries (Schor 2016, Hamari et al. 2016, Cusumano 2015, Sundajaran 2014). The sharing economy is based on the use of peer-to-peer platforms, with a user sometimes paying for a service or exchanging it without any monetary transfer. Its use is spreading to a growing variety of products and services. In many of the industries where the sharing economy is gaining exponential momentum, more traditional industries are looking at this relatively new phenomenon as threat to status and current levels of profitability. Uber competing with the taxi industry, Amazon and the retail industry, and AirBnB's impact on the hospitality industry are the best-known examples of these new dynamics.

In all these cases the new entrants are characterized by low marginal cost and low entry barriers, thus pressing down prices in the traditional sector and threatening to reduce significantly the current levels of profitability for the incumbent firms (Rifkin 2014). Scholars and managers have tried to develop

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strategies to face this new market structure (Casadeus-Masanell 2010, Jiang and Tian 2016).

The interest the sharing economy generates among researchers also includes aspects related to consumer behaviour, externalities associated with these new forms of economic activity, different regulatory framework alternatives, and the effects on concrete labour markets. Debates range from a regulatory point of view, with the consideration that these bring unfair competition in regulated sectors, such as the taxi industry in most countries, to concerns over consumers' protection or its implication in the labour market. If someone is selling services mainly through a sharing platform, is he self-employed or should he be considered an employee of the platform? These questions are a challenge for governments and scholars in many different disciplines. Uber's services have generated concerns about how it affects the labour market in terms of precariousness and low wages, but also in terms of consumers' safety (Rogers 2015, Isaac 2014). In some countries, such as Germany, Japan and Spain, Uber services have been banned, and some judges have passed sentences classifying the platform as unfair competition in a sector that traditionally has regulated supply through a system of medallions and licenses provided by the public sector. At the European level, the EU Court of Justice is expected to pronounce itself about this controversy.

The hotel industry and AirBnB apartments offers a similar picture. Many AirBnB apartments do not have a legal license to perform accommodation activity, and this use can affect neighbours' quality of life. Some cities, like New York or Barcelona, among the most visited in the World, have taken different actions in an effort to regulate this new situation. The accommodation sharing platforms increase the welfare of buyers, through providing a more authentic experience to tourists and cheaper prices. Sellers also benefit by earning an additional income from renting spare rooms or the entire dwelling. However, one possible externality that is drawing attention of scholars and regulatory authorities is the price increase of housing, making it less affordable to residents (Lee 2016), and contributing to tourism overcrowding in some specific neighbourhoods of the most visited cities (Garcia-Hernández and Calle-Vaquero 2017).

A second line of research from the Management Science perspective is to understand how these new competitors are affecting the traditional industry and the best response from the market participants (Cusumano 2015, Matzler, Veider and Kathan 2015). Particularly in the hospitality industry, hotels are characterized by high fixed costs and their financial performance is very dependent on the level of occupancy. The vigorous and substantial increase in accommodation provided by sharing platforms can force hotels to reduce their prices in order to keep up the occupancy rate, but affecting the margin obtained. The extent to which hotels will be affected by the accommodation offered by AirBnB will depend on their cross price elasticity. Hotels in the upper segment of quality offer a service that is far more than just accommodation, and empirical evidence suggests that they are less affected than hotels in lower quality segments (Zervas et al. 2014), however a good location seems to help hotels with a lower drop on profitability (Aznar et al. 2017).

This paper analyses if higher quality, as perceived by customers, allows hotels to apply consistently higher prices. Traditionally, this role as a signalling mechanism was played by the star rating. Nowadays, Internet access has changed the way consumers gain information about different options. For instance, there are specific websites, like Tripadvisor or Booking, being used by millions of users around the world. The star system is a signalling mechanism that shows a positive impact in hotels' prices (Israeli 2002), but the star system is not homogeneous among countries or even regions, and it takes time to change. The Internet provides the opportunity for accessing past customers' valuations and comments that are updated automatically, and even allows a customer to differentiate among hotels with the same star category. Analysing how prices differ according to past customers' valuations in some of these websites is the main purpose of this paper. The data used comes from a sample of 106 hotels from the city of Barcelona, one of the most visited cities in Europe, representing 27.18% of the total population of hotels in the city. Barcelona has experienced an increasing demand over the last two decades with nearly 4 million international tourists in 2016, and a population of only 1.6 million. The number of hotels increased from 110 in 1990 to 408 in 2016. The city that has shown an exponential growth in touristic apartments, many of them supplied trough AirBnB. According to AirBnB information, the number of listings in Barcelona has increased from 4 in 2009 to 9,200 in 2016, creating concerns about the effects on the housing market or the hospitality industry labour market.

The aim of this paper is to assess based on empirical data if a better online reputation allows a hotel to charge higher prices, and if this is significant even considering hotels in the same star category. A positive answer to this hypothesis would be useful to hotel managers, because investing in quality can be a tool to avoid the negative effects that AirBnB's strong increase in supply can have on hotels' revenues and profits. We have also considered if the quality assessed by past AirBnB customers shows the same correlation with prices as that observed in hotels. According to our data, the effect of quality is less important as a key driver for AirBnB prices. Rather, AirBnB customers are more concerned about location, which is an important factor in terms of price differences.

The structure of the rest of the paper is as follows: Section 2 summarizes the previous literature, Section 3 describes the data used and the methodology applied, and finally, Section 4 includes the main results and discussion.

Literature Review

Tourism is considered a strategic industry with valuable contribution to GDP growth and employment (Ivanov and Webster 2017, Balaguer and Cantavella-Jorda 2002). This importance explains why so many authors have shown interest in understanding the dynamics of the tourism industry, including accommodation services provided by the hospitality industry as a key service within the tourism sector. One of the main topics in Business and Management academic literature is the determination in each particular industry of the key factors that make a

firm more profitable than the average observed in the industry. These are the factors that constitute a competitive advantage (Kandampully and Suhartanto 2000, Yong Kim and Oh 2004).

Particularly in the hospitality industry, Sainaghi (2010) summarizes the findings of previous literature in identifying external and internal factors that can be considered key variables in explaining hotels' financial performance. Some of the external factors that can impact tourism demand and therefore affect the hotels' profitability are geopolitical instability (Webster and Ivanov 2015), exchange rate volatility (Witt and Martin 1987), and natural disasters (Park and Resinger 2010). However, most of the literature on hotel performance focuses on internal factors. Strategic decisions and efficient management can lead to profitability above the average of certain destinations. The right decision in terms of location (Claver-Cortés 2007, Chu and Choi 2000), a financial structure not relying too much on debt (Phillips and Sipahioglu 2004), appropriate revenue management (Chiang and Chen 2006), and commitment towards a total quality management system (Tarí et al. 2010) are among the factors that the literature has identified as internal drivers of profitability.

This paper focuses on the importance of quality as a strategic variable that can help to develop a competitive advantage in the hospitality industry, especially in a changing environment after AirBnB and similar multisided platforms have exponentially increased the number of rooms available to tourists in the most visited cities around the world. Total quality management has emerged as key strategy in which both scholars and managers are interested (Dale 2015).

Measuring quality in services is a challenge, because quality is perceived subjectively by customers. A customer's perception is affected by the conditions present at the moment of the service provision. Some of these conditions can be partially controlled by the hotel management, but others are out of its control (Hartline and Jones 1996, Gronroos 1998, Brady and Cronin 2001). Previous literature has established the existence of links between a management focused on providing quality and the financial performance of the hotel (Pereira-Moliner et al. 2012). This quality approach requires commitment from the firm in the form of permanent employee training, quality control, revision of the processes followed by the hotel, and constant innovation. The expected positive effects include the hotel's capacity to apply higher prices, an increase in customers' loyalty, and building a positive reputation. Empirical evidence suggests that adequate quality management improves competitive advantages through lower costs and greater hotel differentiation (Molina-Azorín et al. 2015). A hotel's business performance is positively influenced by management that commits towards customer orientation (Grissemann et al. 2013, Benavides-Velasco et al. 2014). These studies cover different geographical areas but reach similar conclusions, namely better quality of the service offered to customers has a positive impact on financial performance.

As important as the quality offered by the hotel are the accessibility and costs of this information for potential customers. As in many other industries, the hospitality industry is characterized by a situation of asymmetric information. Hotels have more knowledge than future customers in terms of what services they

are going to receive and what strengths and weaknesses characterize the service provided. Before the massive introduction of the Internet as the main tool for information search, the star rating system signalled the quality of a hotel (Israeli 2002). This system is far from being perfect for many reasons (Fernandez and Bedia 2004). ICT technologies, Internet, and the creation of online accommodation websites like Booking are allowing customers to compare alternatives and to get useful information about hotels and other accommodation forms in a way unthinkable only 10 years ago (Chaves et al. 2012, Yacouel and Fleischer 2012).

What matters is the customer perception at the moment the service is given. A negative perception can nowadays spread quickly through social networks or specialized websites on tourism accommodation and hotels. Online user reviews influence hotel sales (Ye, Law and Gu 2009). In a recent paper about how online booking intentions are affected by online reviews from past customers, the authors concluded that negative reviews could impact online purchase intentions, as well as comprehensiveness and usefulness. The reviewer's presumed expertise can also have a statistically significant effect on online booking intentions (Zhao et al. 2015). Although the role of online reviews for hotels has been analyzed by scholars, there is not similar evidence for the importance of online reviews in apartments rented through online platforms. Thus, it is interesting to question if online reviews are also a quality signal in short renting to tourists visiting a city (Zervas, Proserpio and Byers 2015). The available evidence suggests that there is a bias towards higher ratings amongst AirBnB reviewers with more than 90% of ratings falling in the two highest possible values. Such a distribution makes this information less useful as a way to differentiate apartments based on the quality of the experience. A hedonic price model for AirBnB listings found a similar result, with the average past customers' reviews being insignificant as a price determinant.

Based on the previous literature the following hypotheses will be tested:

H1: The star rating is a quality signal allowing hotels in the upper scale to charge higher prices.
H2: Considering a given number of stars, hotels in the same category are signalling their quality through online reviews by past customers, with the best-rated hotels applying higher prices.
H3: AirBnB apartments with better online valuation charge higher prices.

Data and Methodology

To test the set of hypothesis data from Barcelona, hotels and apartments listed through AirBnB were collected. Barcelona has become an important tourist destination among European cities, being the third most visited city in Europe in 2016. According to the data managed by the local government, hotels received 8.3 million tourists in 2015, compared with just 1.7 million in 1990. The Olympic Games in 1992 were a starting point for transforming the city into the touristic cluster it has become. The supply has grown to tackle the

demand growth, with the last available data showing that Barcelona now has (2016 data) 408 hotels with 34,872 rooms, in 1990 the hotel industry comprised only 118 hotels with 10,285 rooms. The rise of tourism activity has led to a boom in the number of apartments offered to tourists. According to current legislation, the city council has the right to give the relevant licenses, and it is currently inclined to reduce the amount of apartments. The city council has also decided that the number of hotels in the centre of the city cannot increase due to the problems associated with tourism overcrowding. As a consequence of this constrain in supply and a strong demand, hotels' prices are increasing and the price paid in hotels transactions too, the occupancy rate is one of the highest among European cities with values consistently around 75%, although with an important factor of seasonality leading to nearly 90% occupancy in July and August and only 60% in February.

In terms of the sharing economy, there are increasing numbers of dwelling owners who have decided to offer a room or their whole property as short-term rent accommodation for tourists, even when it is not legal. AirBnB and similar platforms have been accused for facilitating this economic activity, without checking if all listings on the web come from landlords that have the corresponding license. There is not an official estimate of the number of apartments available, because there are 1,426 registered touristic apartments, but illegal ones can be around 40% of the legal number. The number of listings in AirBnB was 9200 in 2016, one year before it was 5000, the 84% increase in just one year offers a clear picture of how quickly and strongly the sharing economy affects the traditional industry. In this context, Barcelona is an important touristic destination with a well-developed hospitality industry and a growing supply of listings, amounting to nearly 22% of the rooms already supplied by the hotel industry.

The sample of 109 hotels represents 28.60% of the hotel population. The hotels were selected applying stratified sampling, therefore, the percentage of hotels for each star category is the same as the importance they represent in the total population of hotels. The most common star categories are 3 and 4 stars, together they represent more than 60% of the sample. The concentration on middle-scale quality hotels is common in many European cities, as it is the dynamics of a lower number of rooms offered in the segment 1-2 stars and higher increases in the upper segment in terms of quality. Information related to each hotel in terms of quality includes two different variables: the official number of stars and the average Internet valuation from 1 to 10 on two of the most used websites for hotel information, Tripadvisor and Booking. This data was collected during the third week of November 2016. The same week the price for a weekend on the second week of August was collected. August ranks second place in terms of occupancy rate, data for July, which ranks first, was not consistent because most of the hotels in the sample were already completely full and not offering rooms even 9 months before the stay. The prices collected correspond to a double room offering similar services, just accommodation and breakfast. To gather homogeneous and consistent data these online prices were collected looking for booking similar room options.

There are many different options to book a hotel, and different options provide different prices. For instance, Booking.com always agrees with hotels that want to be present in the website to offer the lowest price compared with any other available options. In this empirical analysis, prices were taken from the hotels' websites in the same week and looking for the maximum grade of homogeneity in the room conditions. The empirical evidence of this paper can be improved in future research by widening the sources from which the sample of prices was selected. The importance of online booking through platforms like Booking.com or Tripadvisor suggests including prices from these websites and similar ones would give higher consistency to the results obtained. Table 1 shows the sample composition and the prices applied for the selected weekend.

Table 1. *Sample of Hotels*

Hotel Category	% of the sample	Average price	Internet valuation
1 star	13.21%	214.43€	7.54
2 stars	10.38%	244.67€	7.94
3 stars	28.30%	264.81€	8.20
4 stars	33.02%	369.99€	8.18
4 stars superior	6.60%	411.42€	8.82
5 stars	3.77%	588.26€	8.64
5 stars Great Luxury	4.72%	670.83€	9.14

As Table 1 shows, prices applied by hotels show a positive correlation with the star category. Prices increase according to the star category with the upper scale hotels applying a price almost three times the one applied by the 1-star hotels. Internet valuation is the average of the value from online reviews by past customers, considering Tripadvisor and Booking. Although the 5-star Great Luxury hotels are rated on average with more than 9 out of 10 and 1-star hotels only slightly above 7.5, the correlation is not as clear as with the stars given to each hotel. For instance, the average Internet valuation for 3-star hotels is above the one for the 4-star locations, and similarly 4-Star Superior hotels' valuations are above the average given to 5 stars. In Spain each region has the competence of define what are the conditions required to get a certain star rating. In Catalonia, the region in which Barcelona is located, the system has up to 6 categories, differentiating 5 stars from 5 stars Great Luxury, a difference that doesn't exist in other regions. The current law that defines the requisites for each star category is from 2012. For example, Great Luxury hotels must provide bellboy service, bathrobes to customers or parking services and hairdresser services, among other conditions. Based mainly in material requirements, it can be inferred that the star rating as a quality signal and past customers' online reviews are measuring different aspects of the quality associated with the services provided.

To analyze if Internet valuation is a quality signal that gives additional value to the traditional star system, an analysis of prices and Internet ratings have been made for hotels belonging to the same category. The idea is to check if hotels with the same star category but different reviews from past customers show positive correlation with prices. Table 2 shows average values according

to Internet rates from online reviews and the average prices for the subsample of 3 and 4-star hotels.

Table 2. *Hotels' Prices and Online Reviews*

Hotels category and internet average rating	Average price
3 stars hotels with less than 8	218.34€
3 stars hotels between 8 and 9	279.89€
3 stars hotels with more than 9	392.15€
4 stars hotels with less than 8	365.63€
4 stars hotels between 8 and 9	355.45€
4 stars hotels with more than 9	457.25€

According to the data, hotels with more than a 9 on Internet ratings have a premium in terms of the price they can charge compared with low-rated hotels in the same category. Hotels in the 3-star segment rated above 9 charge on average 79.59% more than same category hotels rated below 8. Similarly, in the 4-star category the price difference between the ones rated above 9 and the ones with less than 8 is 25.06%. These results suggest that investing in online reputation can help hotels to signal themselves as better among others belonging to the same star rating, with positive effects in the capacity for setting higher prices and brand loyalty.

The first hypothesis is to test the star rating as a quality signal that allows hotels to charge higher prices. Star rating and Internet valuation are variables that show a normal distribution, however according to the results of Kolmogorov-Smirnov and Shapiro-Wilk test, price distribution does not follow a normal distribution. Considering the results of the Normality test, a non-parametric test has been applied to test if prices are different according to star category. According to the Kruskal-Wallis test, significance value ($0.000 < 0.05$), there are differences in prices applied according to the star category. The Spearman Rho coefficient correlation between hotels' prices and the star category system is 0.665 and significant at a 1% level. This value evidence supports Hypothesis 1, reinforcing the result found in the literature review (Israeli 2002) that considers star category as a signal mechanism and allows the hotels managers to charge higher prices.

Hypothesis 2 proposes that online reviews are a useful signalling mechanism to differentiate among hotels within the same category. The Spearman Rho coefficient between hotels' prices and Internet valuation by past customers is 0.533, and it is significant at 1% level, considering the subsample of 3-star hotels. The same analysis for the subsample of 4-star hotels shows a Spearman Rho value of 0.336 and is significant at 5% level. These results support the acceptance of Hypothesis 2. This is an important result with consequences for hotels' management protocols.

Finally, the third hypothesis concerns AirBnB apartments. If Airbnb apartments are a close substitute to accommodation at hotels and guests can leave their opinions and rates to future costumers, it would be logical to expect a correlation between prices applied and the average valuation by customers. However, this hypothesis has some counterarguments. AirBnB apartment's rates

tend to be close and, if too high, can lose their value as signalling mechanism (Zervas, Proserpio and Byers 2015). The sharing economy has been considered by others (Schor 2016) as a source of low-cost services, in this context if the segment of consumers that uses this service is really sensitive to prices, the role of service quality becomes less relevant.

In November 2016, the same dates when data about hotels were collected, a sample of 63 apartments from AirBnB was considered to create a database of prices for the same weekend considered in the hotels analysis, the second week of August. The current ratings on the Airbnb website were recorded. A random sample was applied, and the small size of the sample is explained by the difficulties of gathering the data in the same few days in which the hotels' information was collected. From this sample, 6 apartments have not had enough guests expressing their opinions to be rated. Table 3 shows the main descriptive statistics for apartments' prices and guests' valuations.

Table 3. *AirBnN Apartments' Descriptive Statistics*

Variable	Mean	Std. deviation	Maximum	Minimum
Price	324.51€	141.22€	959€	167€
Quality rating	8.91	0.6887	7	10

Neither of these two variables shows a normal distribution, and consequently, its correlation has been measured using Spearman Rho correlation. This correlation is positive (0.209) but not statistically significant. We do not accept the existence of a correlation between prices and ratings by past customers. This result suggests that travellers who choose AirBnB options give more importance to other variables, besides past customer reviews. Previous studies have concluded factors such as the apartment photos (Ert et al. 2016), the authenticity of the experience (Liang 2015) or the location (Gutierrez et al. 2016) play an important role in the purchase decision made by tourists using this alternative accommodation

Results and Conclusions

Understanding the role of higher quality perceptions by customers in the capacity of the hotel to apply higher prices is especially relevant in the current context of increases in a new form of accommodation supply through peer-to-peer platforms. Empirical evidence (Zervas, Proserpio and Buyers 2014) suggests that AirBnB supply has created pressure for reducing prices in order to maintain an acceptable level of occupancy. To ask which strategic variables help firms to prevent this drop in profitability is a relevant question for scholars and managers. Location in the centre of the cities or in the more touristic places is helping hotels to mitigate the effect of AirBnB in revenues and profitability (Aznar et al. 2017). This paper has tried to gain insights into the role of online reputation as an option for higher prices in the context of growing number of competitors. The primary research question that has been tested is if hotels with

better past customer ratings are less affected by sharing economy accommodation platforms, in order to shed light on whether investing in quality can be an efficient strategy to get comparative advantage among hotels in the same star category.

Traditionally, the star category has played a role as a quality signal. However, the way consumers inform themselves has changed with the massive use of the Internet, mainly due to many well-known websites and social media being used to get definitive information in order to book a room. The correlation analysis between prices and ratings from online reviews has been considered as a possible element that would help to differentiate among hotels in the same category. Our results are consistent with this hypothesis. Finally, the analysis of prices of AirBnB apartments and the observed differences amongst ratings are useful in seeing if quality signalling is also significant in the specific market of peer-to-peer accommodation platforms. The statistical test applied and their results in terms of the proposed hypotheses are summarized in Table 4.

Table 4. *Results*

	Test	Result	Significance
Hypothesis 1: A higher star rating is correlated with higher prices	Spearman Rho	0.665	1% level
Hypothesis 2: Hotels in the same star category apply different prices according to its internet valuation based on past customers' perceptions (3 stars category)	Spearman Rho	0.553	1% level
Hypothesis 2: Hotels in the same star category apply different prices according to its internet valuation based on past customers 'perceptions (4 stars category)	Spearman Rho	0.336	5% level
Hypothesis 3: Apartments from Airbnb have higher prices when its rating by past customers is higher	Spearman Rho	0.209	Not significant

A first conclusion from the empirical evidence of this paper is that the number of stars assigned to a hotel and its Internet reputation matter in terms of the hotel's capacity to set higher prices. This result does not mean that these hotels are necessarily more profitable because to deliver a higher quality implies also higher operational costs and more investment. This is why future research on the effects of a higher Internet reputation on financial performance would be useful in helping managers to develop adequate strategies within this new context. The results are based on correlation analysis. Data from more touristic cities and the use of a more complex and reliable statistical tool would help future research to consolidate these results.

Although star category is still a good predictor of prices (Israeli 2002), many hotels belong to the same category and to find a variable that helps to differentiate quality provided by hotels in the same category would be extremely useful. Past customers' perceptions as expressed on hotel informational websites are possible options. According to our results for 3 and 4-star hotels, the most common ones in many touristic European cities, Internet valuation is positively

correlated with price (Ye, Law and Gu 2009). However, consumers' decisions are not only based on the rating, rather, potential customers make their choices considering many more elements than just the average rating (Filieri and McLeay 2014). Future research assessing the importance of online reviews in hotels' financial performance would benefit for including text data analysis.

Finally, the existence of a correlation between online reviews from past customers and prices of AirBnB apartments is not statistically significant. This result has been based on a small sample, therefore future research including bigger samples and more aspects from online reviewers, rather than simply the average valuation, will help to understand the impact of online reviews in the capacity of landlords to set higher prices. The not significant correlation between online reviews and apartments' prices is consistent with some authors' arguments (Zervas, Proserpio and Byers 2015), these authors consider that high valuations but low dispersion of them hinders their role as a signal. A second argument to explain the lack of significance of the relationship between AirBnB apartments' prices and Internet valuations is the hypothesis of a market segment that makes their purchase decision in terms of other variables, such as location, the attractiveness of the photos in the website, and comments, rather than average value (Ert, Fleischer and Magen 2016).

Understanding how consumers make their decisions and what elements they really take into account when making purchasing decision is crucial to defining the best strategy from the hotels' management point of view in a context in which new actors are offering similar services and in which consumer behaviour is changing constantly at the same time that technology does. On the other hand, understanding what kind of consumers decide to use apartments through peer-to-peer platforms and what they value when deciding where to stay is a critical factor in order to predict how the accommodation industry is going to evolve.

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