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Accommodation prices on Airbnb: effects of host experience and market demand

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Abstract

Purpose – Accommodation sharing is a major trend shaping the hospitality industry, and Airbnb is the most prominent sharing platform driving this growth. While price convenience is reported as one of the main strengths of Airbnb accommodations, only a few studies have examined price determinants. In particular, it is unclear whether hosts dynamically adjust prices for shared accommodation based on their experience with price management and on the level of market demand. The purpose of this paper is to fill this gap by suggesting and testing a comprehensive hedonic pricing model.
Design/methodology/approach – Data from all 1,056 Airbnb listings for accommodations available in the city of Verona, Italy on four booking dates in 2016 are collected and analysed through regression analysis.
Findings – The results highlight that price is significantly related to the level of the host's accumulated experience and the level of market demand on a specific booking date. The findings provide support for the ability of hosts to dynamically adjust prices for their accommodations.
Practical implications – Drawing on the innovator's dilemma theory, this study suggests some strategies that traditional hotels may adopt to react to the disruptive nature of Airbnb.
Originality/value – This is one of the few studies to address hosts' pricing strategies and specifically consider price adjustments owing to variations in host experience and market demand.

Keyword Pricing, Online reviews, Hospitality, Sharing economy, Airbnb

Paper type Research paper

1. Introduction

Peer-to-peer (P2P) (Pizam, 2014) or consumer-to-consumer (Täuscher and Laudien, 2017) accommodation sharing is a major trend shaping the tourism and hospitality industries (Guttentag, 2015; Guttentag and Smith, 2017). This phenomenon—which is also known as P2P property or accommodation rental—is not completely new, because room rentals have existed for a long time. However, the main difference between P2P accommodation sharing and traditional room rentals is the presence of digital platforms to connect renters and owners (Pizam, 2014). Such platforms are characterised by some distinctive features: they connect independent actors from the supply and the demand sides, and these actors directly interact; they provide an institutional and regulatory frame for transactions; and they do not substantially produce or trade goods or services themselves (Täuscher and Laudien, 2017).

According to Zervas *et al.* (2017), the growth of P2P accommodation sharing is related to the flexibility that these platforms guarantee suppliers, that is, the option to list, delist and adjust their offerings. In addition, these platforms facilitate such sharing by performing several activities, such as screening all parties involved, managing bookings and collecting payments (Pizam, 2014). Among these platforms, Airbnb is the most prominent and its disruptive impact has driven the extremely rapid growth of the accommodation-sharing phenomenon (Guttentag, 2015). In June 2017, more than three mn listings in 191 countries and more than 65,000 cities were available through Airbnb (www.airbnb.com/about/about-us). The reach of the phenomenon is particularly remarkable in historic city centres, where shared accommodation is more successful than hotels, which face difficulties in finding buildings and obtaining the requisite permits (Gutiérrez *et al.*, 2017).

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While the growth of Airbnb has been rapid and widespread, the future developments and effects of this phenomenon are not clearly quantifiable and several scenarios can be forecasted (Oskam and Zandberg, 2016). According to some observers (Guttentag and Smith, 2017; So *et al.*, 2018), Airbnb has the potential to become a disruptive innovation (Christensen and Raynor, 2003), that is, to move from attracting low-end consumers to satisfying the demand of mainstream customers by acting as a substitute for, and not as a supplement of, hotels (Blal *et al.*, 2018). Other studies claim that Airbnb is destined to remain a niche player and that the traditional hospitality companies do not consider it a significant disruptor (Varma *et al.*, 2016).

The analysis of pricing strategies can provide valuable insights to understand whether Airbnb will disrupt the hospitality industry. Pricing strategies reveal a significant amount of information about competition in the lodging industry (Becerra *et al.*, 2013). Prices on Airbnb are reported to be set inefficiently compared with hotels owing to hosts' unprofessional pricing behaviour (Chen and Xie, 2017). For example, hosts may not be used to changing room rates when the demand changes during high-peak seasons or events (Chen and Xie, 2017).

However, available studies about hosts' price-setting strategies are limited. In particular, the related literature has focussed on the effects of static price determinants, such as accommodation attributes (e.g. the number of beds and amenities) (Wang and Nicolau, 2017) and host characteristics (e.g. the host profile picture) (Ert *et al.*, 2016). Hence, it remains unclear how accommodation prices vary depending on the experience the host has accumulated over time and on the level of demand on a specific date.

Exploring these effects is fundamental to drawing conclusions about the disrupting nature of Airbnb. In fact, evidence suggests that prices of P2P shared accommodations are relentlessly moving upwards owing to host experience and that they are dynamically adjusted to adapt to demand could signal that hosts' price-setting strategies are becoming more sophisticated and similar to those applied by hotels, thus increasingly exacerbating competition. This paper aims to fill this gap by analysing secondary data about all 1,056 Airbnb listings for accommodations available in the city of Verona, Italy on four booking dates in 2016.

The results will not only enrich the available literature mentioned above but will also offer useful insights about pricing strategies for both hosts and hospitality managers. The remainder of the paper is structured as follows. Section 2 examines the available literature about the sharing economy and the accommodation sector. Section 3 reviews previous studies about the role of price. Section 4 discusses the price determinants of accommodations listed on P2P platforms and drawing on available findings, develops the research hypotheses. Section 5 describes the methods, and Section 6 presents the results of the empirical analysis. Section 7 discusses the results, and Section 8 presents the limitations of the analysis and conclusions.

2. The sharing economy and accommodation sector

In the past decade, several technological improvements and changes in economic and social contexts have fostered the advent of a sharing economy (Mody *et al.*, 2017). According to the European Commission (2016), the term sharing economy indicates business models based on collaborative platforms that provide a marketplace for the temporary usage of goods or services often provided by private individuals. A sector affected the most by this phenomenon is the accommodation industry (Mody *et al.*, 2017; Williams and Horodnic, 2017). Accommodation (short-term letting) is one of the five crucial sectors (together with passenger transport, household services, professional and technical services and collaborative finance) of the sharing economy in the European Union, where it generated revenues of €3.6 bn in 2015 (European Commission, 2016).

It is generally recognised that tourists are increasingly searching for unique and emotional travel experiences that enable them to engage in authentic experiences on a personal level (Chandler and Lusch, 2015). Following this reasoning, P2P hospitality collaborative platforms offer opportunities for authentic experiences through personal engagement with real local life (Camilleri *et al.*, 2017; Zhang *et al.*, 2018). Hotel industry reactions to the growth of the sharing economy are twofold. First, many are worried about the heavy growth of informally rented lodgings and the unfair competition. In particular, several negative consequences have been identified: a decrease in prices and revenues, reduction in employment rates and lack of control over safety standards and health practices (Mody *et al.*, 2017). Indeed, according to Williams and Horodnic (2017), the growth of the informal sector represents one of the most important barriers to full development of the hotel industry. However, others have argued that accommodation sharing is not a threat to the hotel industry. In particular, they have suggested that elements such as service quality, room comfort, reputation, cleanliness and security are unique to hotels and will continue to differentiate them from sharing economy accommodation services (Varma *et al.*, 2016). From this perspective, the two types of accommodation services are based on different business models and they do not compete for the same consumer target (Mody *et al.*, 2017).

Among P2P short-rental companies, Airbnb is one of the most prominent (Edelman and Luca, 2014). Founded in August 2008, the company's headquarters are in San Francisco, California. It is an online platform where people can publish, discover and book accommodations worldwide. The idea was born over a week in 2007 in San Francisco. At the time, the Industrial Design Society of America had organised its annual conference and all the hotels in San Francisco were sold out. Airbnb's Founders, Brian Chesky and Joe Gebbia, decided to offer a part of their loft as an accommodation for guests of the conference to earn money they needed to pay their rent (https://press.atairbnb.com).

The accommodations available on Airbnb range from a simple room to an apartment, a castle or a villa. Airbnb is able to connect people with accommodations at any price in more than 65,000 cities and 191 countries; currently, more than 200,000,000 hosts have used the service. Airbnb's biggest night to date was 5 August 2017, when over 2.5 million people stayed at accommodations booked on the platform. In 2015, the role of Airbnb as an alternative to the hotel industry became official when it was named as the official alternative accommodation services supplier for the 2016 Rio Olympic Games (https://press.atairbnb.com). Several studies have analysed the motivations for choosing Airbnb and have identified both economic and social benefits (Guttentag, 2015; Guttentag *et al.*, 2017; Tussyadiah and Pesonen, 2016). This is consistent with Airbnb's mission 'to create a world where people can belong when they travel by being connected to local cultures and having unique travel experiences" (https://press.atairbnb.com).

3. Role of price in the success of P2P accommodations

Airbnb accommodations are popular because of their effective mix of affordable prices, authenticity and uniqueness of co-created experiences and household amenities (Guttentag, 2015; Guttentag and Smith, 2017; Zhang *et al.*, 2018). However, price is often reported as the most important factor explaining the boom of this phenomenon (Pizam, 2014; Tussyadiah and Pesonen, 2016).

In fact, tourists often select Airbnb accommodations because these are perceived as cheaper than any type of hotel and as offering higher service quality than budget hotels or motels (and, in some cases, than midrange hotels as well) (Guttentag and Smith, 2017). The role of price is emphasised by the results of Tussyadiah and Pesonen (2016), who found that people were not interested in using P2P accommodation sharing when they perceived that it did not generate enough cost savings to be valuable. In addition, recent research

(Liang *et al.*, 2017, 2018) has revealed that the perception that Airbnb accommodations are reasonably priced and value for money offers increase repurchase intentions (purchasing rooms via Airbnb again), especially for customers with high price sensitivity. Similarly, Mao and Lyu (2017) found that perceived value (i.e. the perception that Airbnb represents a good deal compared with other lodging choices) is the strongest reason for travellers' positive attitudes towards Airbnb and their desire to use Airbnb again when travelling. Recent research has suggested that a reason for the low prices of some P2P shared accommodations is that many hosts operate in the informal sector, which includes any paid activity that is not declared to the authorities for tax, social security or labour law purposes (Williams and Horodnic, 2017). This practice allows many hosts to enjoy a cost advantage over hotels.

In summary, P2P accommodation sharing is commonly perceived as offering high value at a reasonable cost (Tussyadiah, 2016), thus making price an important factor for its success. However, several industry reports have highlighted that contrary to popular belief, Airbnb is not always cheaper than hotels or other options for temporary accommodation (CBRE, 2016). For example, in some cities the average rate paid for an Airbnb unit is consistently higher than the average hotel rate (CBRE, 2016). Nevertheless, accommodations provided by Airbnb are usually perceived by tourists as cheaper than hotel rooms, thus making price a key factor for the success of Airbnb.

4. Price determinants of P2P accommodations

Despite the relevance of price for the success of accommodation sharing, knowledge on price determinants and strategies of P2P accommodations remain limited. Although numerous studies have investigated the factors explaining prices and price-setting strategies in the hotel industry (e.g. Hung *et al.*, 2010; Pawlicz *et al.*, 2017; Zhang *et al.*, 2011), only a few have explored this issue in the accommodation-sharing context.

Wang and Nicolau (2017) conducted the most comprehensive analysis of price determinants of sharing economy accommodation rentals, using data from Insideairbnb.com for 33 cities (on one specific date for each city) worldwide. They evaluated the effect of five groups of variables related to host attributes, site and property attributes, amenities and services, rental rules and number of online reviews and ratings. The findings revealed that most of the variables considered in the analysis had either significant positive or negative effects on the accommodation price. Despite the high value of these results, the study offered a static view and completely overlooked price-setting strategies. In particular, they did not consider that prices may be dynamically adjusted by hosts based on their experience with pricing strategies and on the level of market demand.

Hence, the present paper develops specific hypotheses for the effects of host experience and market demand on the price of a shared accommodation. In addition, it considers the effects of accommodation attributes, which have emerged as highly significant price determinants in the literature. It does not intend to provide a comprehensive examination of all price drivers of shared accommodations, and hence, excludes other factors highlighted in one or more previous studies from the analysis. Hypotheses are crafted hereafter drawing on the available literature for each determinant, starting from accommodation attributes.

Accommodation attributes

Previous research has shown that the price of a listing is related to some of the attributes of the accommodation, such as the type and size of the accommodation (Benítez-Aurioles, 2018). In terms of type, Airbnb allows hosts to rent either entire homes/apartments or private/shared rooms. As highlighted by available studies (Ert *et al.*, 2016), the type of accommodation has a significant effect on prices, since prices of entire homes/apartments are higher than those of rooms. For example, a study on Airbnb listings in Canada

(Gibbs *et al.*, 2018) showed that entire apartments are priced 44.2 per cent higher than private rooms. In addition, prices are positively related to the size of the accommodation, because hosts charge higher prices for larger accommodations (Ert *et al.*, 2016). Therefore, the present paper tests the following null hypotheses:

H_{01}. No difference exists between the price for an entire apartment and that for a private room.

H_{02}. The price of the accommodation is not related to its size.

The number and valence (positive or negative) of the reviews received on Airbnb by an accommodation are important attributes characterising each accommodation and potentially influencing a customer's choice and willingness to pay a certain price (Gibbs *et al.*, 2018). The role of reviews on accommodation-sharing platforms is particularly relevant because security is perceived as an issue of major importance by Airbnb users (Guttentag and Smith, 2017; Mao and Lyu, 2017). In fact, lack of trust (including concerns for privacy, security and service quality) is often reported as the main barrier preventing travellers from using P2P accommodations (Tussyadiah and Pesonen, 2016). Moreover, the analysis of complaints of Airbnb users reveals that betrayed trust is among the major concerns they reported (Phua, 2018).

This issue can be addressed by platforms such as Airbnb through legal guarantees, assistance programmes, transparent host information and—most importantly—electronic word-of-mouth supported by online review systems (Mao and Lyu, 2017). Reviews can be used as a means to signal reliability and quality, thus allowing hosts to set higher prices. Therefore, reviews may act as substitutes for the absence of official grading scheme categories, such as those used for hotel classifications (Martin-Fuentes *et al.*, 2018).

In this regard, Liang *et al.*, (2017, 2018) found that the level of perceived risk had a negative effect on perceived value, that is, on the perception that Airbnb accommodations were reasonably priced and offered good value for money. Online reviews may reduce such risk.

Contrary to these expectations (and to events in the hotel industry), previous research has consistently reported that review valence has no effect on the prices of Airbnb listings (Ert *et al.*, 2016). To explain this finding, previous studies have argued that reviews have lost their informative value because of extremely high ratings: more than 90 per cent (up to 97 per cent in some cities) of Airbnb hosts receive scores between 4.5 and 5 stars (out of 5) (Ert *et al.*, 2016). A recent large-scale study conducted in India, Portugal and the USA (Brochado *et al.*, 2017) revealed that the average rating for all the properties included in their analysis ranged from 4.5 to 5. Several explanations have been suggested for this phenomenon, including the higher likelihood of more satisfied guests writing reviews compared with unsatisfied guests, who are more likely to be non-reviewers (Chen and Xie, 2017). In addition, guests may give high ratings because of the human tendency to avoid conflict and because they think that future hosts may be reluctant to rent to guests who have written reviews that are not positive (Teubner *et al.*, 2017). Regardless of these explanations, the effects of review valence on listing prices is non-significant or at the best negligible. Therefore, based on these previous results, this paper did not consider review valence.

With regard to the volume of reviews, the results have been mixed: in some cases, no significant (Ert *et al.*, 2016) or only partly significant (Gibbs *et al.*, 2018) effects on prices were found; in other cases, the effect was significant and negative (Wang and Nicolau, 2017). Researchers (Liang *et al.*, 2017, 2018) have suggested that accommodations with higher prices receive fewer bookings and, in turn, fewer reviews. However, this explanation may be questioned because studies from the hospitality industry have not found the same effect and have reported that review valence and volume have a positive combined effect on prices

(Nieto-García *et al.*, 2017). Therefore, the present paper suggests a different explanation. Recent studies have shown that review manipulation through solicitation is a widespread phenomenon (Gössling *et al.*, 2016; Magno *et al.*, 2018). Users may perceive that not only the extremely positive valence but also a high number of reviews are the result of the host's active solicitation of reviews from guests. Therefore, when the number of reviews is unusually high, guests may not trust the reviews and may be willing to pay lower prices. This statement seems to be supported by Airbnb's continuous efforts to encourage more honest reviews (Guttentag and Smith, 2017). Therefore, the following null hypothesis is tested:

H_{03}. The price of the accommodation is not related to the number of reviews the accommodation received.

Host experience

Previous research has suggested that hosts usually have low levels of experience in marketing and guest management (Liang *et al.*, 2017, 2018). Chen and Xie (2017) argued that the prices of Airbnb listings are affected to a large extent by hosts' unprofessional pricing behaviour. In fact, while most hotels employ dedicated staff responsible for revenue and pricing, hosts have usually low revenue management skills (Cetin *et al.*, 2016). However, some researchers have distinguished between professional hosts, defined as hosts with two or more listings simultaneously available on Airbnb, and non-professional hosts (Chen and Xie, 2017). Professional hosts tend to fix prices more efficiently compared with non-professional hosts because they are more competent in pricing strategies (Benítez-Aurioles, 2018). A similar positive correlation between the competences of revenue management staff and price levels has been clearly assessed in the hotel industry (Cetin *et al.*, 2016). Moreover, Wang and Nicolau (2017) recently found a positive relationship between the number of listings by a host and the prices. Based on these findings, the following null hypothesis is tested:

H_{04}. No difference exists between the price for a professional host's accommodation and the price for that of a non-professional host.

However, previous research on the determinants of Airbnb listing prices has not considered the effect of the hosts' experiential learning. Accommodation sharing is a relatively new phenomenon and researchers have noted that guests learn over time so that their preferences are correlated with the total number of times they have used Airbnb (Guttentag and Smith, 2017). This paper suggests that hosts learn as well, and that over time, they gain the experience needed to improve their marketing and pricing decisions. In summary, hosts that have joined Airbnb earlier have, on average, accumulated more experience than those who have joined Airbnb later. Therefore, the following null hypothesis is tested:

H_{05}. The price of accommodation is not related to a host's experience with Airbnb.

Market demand

Research on the drivers of shared accommodation prices has focussed almost exclusively on accommodation attributes and host characteristics and has largely overlooked environmental factors (a remarkable exception is the recent work by Aznar *et al.*, 2018). The only study considering the effects of external factors on shared accommodation prices was conducted by Chen and Xie (2017), who examined the effects of competition by the census tract. In detail, they investigated the impacts of both the number of other Airbnb listings located in the same census tract for a given listing and the number of hotels located in the same census tract for a given listing. The results highlighted extremely weak effects

of these variables. However, the available research has not considered the effects of demand seasonality. Instead, research on shared accommodation prices is usually based on the data collected only on one date for each city. However, the present paper suggests that prices are influenced by market demand, so that they will be higher in peak seasons. Hence, the following null hypothesis is tested:

H_{06}. The price of accommodation is not related to the level of market demand on a specific date.

5. Methods

Data from all Airbnb listings for accommodations available in the city of Verona on four booking dates in 2016 were collected. These dates were selected to cover the periods characterised by different levels of demand for accommodation. Tourism in Verona is characterised by seasonality, with the highest number of presences registered in July and August (more than 450,000 presences per month) and the lowest number reported in January and February (fewer than 200,000 presences per month) (http://statistica.regione.veneto.it/banche_dati_economia_turismo.jsp). In addition, the number of presences on specific days is influenced by the events hosted in Verona and, in particular, the Opera Festival held from June to August every year. Based on these premises, the following dates were selected for data collection: Tuesday, 12 July 2016 (on that day, *La Traviata* was performed at the Opera Festival); Wednesday, 21 September 2016; Monday, 24 October 2016; and Monday, 26 December 2016. Data about each of the bookable accommodations listed on Airbnb on each of the four dates were manually collected. The final sample had 1,056 listings (340 on 12 July, 225 on 21 September, 248 on 24 October and 243 on 26 December).

Similar to the previous studies on this topic (e.g. Chen and Xie, 2017; Gibbs *et al.*, 2018), a hedonic pricing approach (Rosen, 1974) was adopted to assess the effects of several attributes on Airbnb listing prices. The attributes included in the analysis and their operationalisation are described in Table I.

Consistent with the previous research on price determinants in hospitality (e.g. Abrate and Viglia, 2014; de Oliveira Santos, 2016), the dependent variable, namely price, was logarithmically transformed for more straightforward interpretation of the results of the ordinary least squares (OLS) regression (i.e. of the impacts of the independent variables). In particular, to ascertain the effect of a dummy variable on a logarithmically transformed

Variable	Description	Mean/ proportion	SD
Price	Price per night (log transformed)	96.85 (log transf. 4.43)	61.53 (log transf. 0.49)
Entire home/ apartment	Entire home/apartment (dummy) (vs private/shared room)[a]	0.42	0.49
Size	Number of beds	3.28	2.06
Reviews	Number of reviews for the accommodation	27.16	44.81
Professional	Professional host (host with two or more listings simultaneously) (vs non-professional host)	0.73	0.44
Experience	Number of months since the host joined Airbnb	25.12	18.94
Market demand	Total number of beds in bookable shared accommodations available on a specific date	891.17	157.34

Table I. Variables description

Notes: [a]Only 2 of the 1,056 accommodations were shared rooms; therefore, private rooms and shared rooms were considered together in the analysis

dependent variable (i.e. the percentage variation of price in this research), it is sufficient to transform the regression coefficient by (e^{β}–1), with β representing the coefficient and e representing the base of the natural logarithm (Gibbs *et al.*, 2018).

Although for most of the variables, the description shown in Table I is immediately clear, the operationalisation of the variable "market demand" requires some clarification. On this point, it should be noted that the capacity (i.e. the number of beds) made available through P2P property rentals is not fixed as it is for hotels, because hosts can make their accommodations bookable only for a limited number of days per year (Guttentag, 2015). Previous analysis (CBRE, 2016) has shown that the number of bookable accommodations varies substantially because of the seasonality of leisure demand in the market. Therefore, when demand peaks, the number of Airbnb listings peaks as well and vice versa (CBRE, 2016). Drawing on these findings, in the present study, the total number of beds in bookable accommodations on a specific date was used as a proxy for the level of market demand.

6. Results

The results of the OLS regression are shown in Table II. The estimations highlight that all relationships are statistically significant. Therefore, all null hypotheses are rejected and the alternative hypotheses are accepted. Overall, the model explains 27.4 per cent of the variance, and multicollinearity is not an issue, since all variance inflation factors (VIF) are well below the cut-off level of 5.

The findings highlight that the price of entire homes or apartments is on average 39.86 per cent higher than the price of private or shared rooms. Hence, H_{01} is rejected and the alternative hypothesis is accepted. Moreover, the price of the accommodation is positively related to its size. In detail, the addition of a new bed increases the price of the accommodation by 5.11 per cent. Therefore, H_{02} is rejected and the alternative hypothesis is accepted. The hypothesised null effect of the number of reviews (H_{03}) is rejected and the alternative hypothesis is accepted. In fact, data suggest that each additional review has a negative impact of −0.26 per cent on price. As regards host experience, the estimations highlight that professional hosts' accommodations command prices that are 5.83 per cent higher than the prices of non-professional hosts' accommodations. Therefore, H_{04} is rejected and the alternative hypothesis is accepted. In addition, a host's accumulated experience has a significant effect. Hence, the null hypothesis H_{05} is rejected and the alternative hypothesis is accepted. Data reveal that each month of a host's experience with Airbnb has a positive effect of 0.21 per cent on prices. Therefore, every year of experience leads to price increases of about 2.5 per cent. Finally, the analysis shows that prices are positively correlated to the level of market demand. Hence, H_{06} is rejected and the alternative hypothesis is accepted. The increase of one bed in the total number of bookable P2P property rentals on one date is correlated to an average increase of prices of 0.02 per cent on that date.

Hypothesis number	Variable	Coefficient	SE	VIF	Impact on price of accommodation (%)
	Constant	3.8879**	0.083		
H_{01}	Entire home/ apartment	0.3355**	0.029	1.236	+39.86
H_{02}	Size	0.0511**	0.007	1.247	+5.11
H_{03}	Reviews	−0.0026**	0.000	1.119	−0.26
H_{04}	Professional	0.0567*	0.031	1.109	+5.83
H_{05}	Experience	0.0021**	0.001	1.182	+0.21
H_{06}	Market demand	0.0002**	0.000	1.037	+0.02

Notes: $F = 67.150$, $p < 0.01$; $R^2 = 0.274$. *$p < 0.10$; **$p < 0.01$

Table II. Results of the OLS regression

7. Discussion

The results of this study enrich available theoretical and managerial knowledge about the price determinants of P2P property rentals in several ways. First, not surprisingly, the analysis confirms the positive effects of type (entire apartment/home vs shared/private rooms) and size of accommodation (Ert *et al.*, 2016). In addition, the findings show that the number of reviews received on Airbnb by an accommodation is negatively correlated to its price. This result is consistent with the evidence provided by Gibbs *et al.* (2018), who suggested that the lower the price, the higher the number of bookings and, in turn, the higher the number of reviews. Even if this explanation is clearly logical, it should be noted that a negative relationship between price and the number of reviews has not been found in studies conducted on hotels (Nieto-García *et al.*, 2017). Therefore, the present paper claims that the motivations for its finding about the negative effect of review numbers on price may differ in part. Users tend to be sceptical about online reviews posted on Airbnb because they are almost all extremely positive. Ert *et al.* (2016), for example, found that the mean review scores of Airbnb listings are approximately 20 per cent higher than the mean review scores of hotels listed on Booking.com. Based on these findings, the present paper suggests that an unusually high number of reviews for an accommodation might lead users to think that the host is applying some sort of review manipulation strategy (Gössling *et al.*, 2016). For example, a host may solicit guests to write reviews by providing incentives or gifts. Guests' awareness of these manipulation strategies is high because, as reported by Magno *et al.* (2018), about one-half of tourists have been directly solicited to write a review. Therefore, when the number of reviews for an Airbnb accommodation is high, guests may be suspicious and their willingness to pay may decrease so that hosts will set lower prices. Accordingly, hosts should not aim to maximise the number and valence of their reviews. In fact, it would be better to receive a lower number of sincere, trustable reviews. Airbnb itself is aware of this issue and is trying to encourage more honest reviews (Guttentag and Smith, 2017).

The findings of this study also provide several hints about the existence of dynamic pricing strategies for P2P accommodations. First, as regards the professional vs non-professional nature of the host, the results demonstrate that professional hosts are able to command higher prices than non-professional hosts. On this point, it should be noted that professional hosts are those who manage two or more accommodations simultaneously. Therefore, they are able to enhance their expertise more quickly than non-professional hosts. In addition, the present study provides evidence that accommodation prices are related to the number of months since the host joined Airbnb. It claims that this effect is related to the level of host experience in marketing and price management, which is quite low at the beginning but increases over time. In summary, more experienced hosts are able to gain some revenue management competences and to set higher prices.

The study also shows that hosts adjust the prices of their accommodations following the level of market demand. Again, this result is a signal that hosts are gaining some competence in adjusting their prices dynamically. This finding disconfirms the popular view that hosts are less likely to change room rates when demand changes, for example, during major holidays, because of their low pricing capabilities (Chen and Xie, 2017).

Taken together, these findings suggest that pricing strategies for shared accommodation are becoming more sophisticated and that hosts are somehow applying some of the revenue management practices developed in the hotel industry. The theoretical implications of these results are remarkable. In fact, the traditional revenue management theory is based on assumptions such as the limited capacity and the availability of systems to collect and analyse a huge amount of data and develop accurate forecasts (Denizci Guillet and Mohammed, 2015). These assumptions are not fulfilled in the case of P2P accommodation sharing. For example, the number of bookable shared accommodations varies from day to day because each host may decide to rent his/her property only for a few days or

months per year. Therefore, the findings signal the need for an advancement of the traditional revenue management theory.

The evidence that hosts are applying more sophisticated pricing strategies provides new insights into the current debate about the disruptive nature of Airbnb (Guttentag, 2015; Guttentag and Smith, 2017; Karlsson and Dolnicar, 2016; So *et al.*, 2018). According to the innovator's dilemma theory (Christensen and Raynor, 2003), a disruptive innovation is a product or service that takes root initially in simple and cheap applications at the bottom of a market and then relentlessly moves up the market, threatening incumbents. The present findings provide evidence that Airbnb is a disruptive innovation because prices grow over time together with host experience. Therefore, Airbnb is relentlessly moving up the market. In fact, it is now challenging not only budget hotels but also some midrange hotels (Guttentag and Smith, 2017).

Therefore, it is important for managers of budget and midrange hotels to establish strategies to address the growth of P2P property rentals, by focussing on attributes such as trust and safety. In fact, as the innovator's dilemma theory highlights, when incumbents realise that disruptive innovations are succeeding, it is too late to face them. Therefore, it is fundamental to adopt proactive strategies (Bruni *et al.*, 2017). In particular, despite its prominent role, price is not the only driver of guests' preference for either hotels or shared accommodations. Therefore, hospitality managers should avoid focussing only on price to attract guests. For example, as previous research has suggested (Mao and Lyu, 2017), hosts could enrich customers' value perception by providing unique experiences through fun- and experience-based programmes.

Moreover, as the innovator's dilemma theory highlights, a way to react to disruptive innovation is to identify and control the driving force of the discontinuous change. Hence incumbents (i.e. the hotels in this study) should find suitable ways to absorb discontinuous knowledge created outside the company (Kim and Shin, 2012). Therefore, traditional hotels should not view P2P accommodation sharing only as a threat but could try to embrace this phenomenon by establishing cooperation with P2P platforms or—in the case of established hotel chains—even by establishing their own platforms.

8. Conclusions and limitations

This research provides new evidence on the price determinants of P2P shared accommodations. In particular, it provides a dynamic view of pricing by showing that prices change over time depending on the market competence accumulated by hosts and on the level of market demand. These findings highlight that hosts are enhancing their pricing competences and have started implementing some of the revenue management practices developed in the hotel industry.

Nonetheless, several limitations should be considered when interpreting the results. First, data were collected on only four dates. Even if the dates were chosen to cover periods characterised by different levels of demand, future studies should be based on data collected on more days to gain more in-depth knowledge on the variation of prices over time. Second, consistent with previous research on this issue, the analysis is based on data publicly available on Airbnb. It would be useful in the future to directly approach hosts through surveys to collect primary data about such factors as their type of education and previous experience in the hospitality sector. These data would allow performing more precise estimations of the effect of experience on price. Finally, data were collected from only one city, namely Verona. Future research should cover other cities (e.g. cities with different patterns of tourism seasonality) to corroborate and extend the findings. Overall, the insights from this study emphasise the need to advance the theory of revenue management to enable to acknowledge the distinctive features of P2P accommodation sharing, such as the absence of a fixed capacity.

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