

---

**Sai Liang**  
Nankai University

**Xiaxia Zhang**  
Harbin Institute of Technology

**Hui Li**  
Nankai University

---

### **How to make guest reviews more informative? A case study of Airbnb**

Sharing economy platforms like Airbnb and Uber have attracted lots of academic attentions in recent years. An important implication for hosts and platform managers is how to make guest reviews more informative. This study collects longitudinal data from Airbnb and constructs panel regression model to observe the determinants of review informativeness. The results show that providing more detailed descriptions about both properties and hosts can motivate the subsequent guests to post more informative reviews. The conclusions of this study provide implications to tourism literature and managerial insights for hosts and platform managers in peer-to-peer property rental platforms.

---

**Key words:** Review informativeness; online reviews; peer-to-peer accommodation platforms;

Airbnb; big data.

Sai Liang  
Collaborative Innovation Center of Modern Tourism Development  
College of Tourism and Service Management  
Nankai University  
38 Tongyan Road, Tianjin, 300350  
P.R.China  
Phone: [86] 022 23012955  
Email: [liangsai@nankai.edu.cn](mailto:liangsai@nankai.edu.cn)

Xiaoxia Zhang  
School of Management  
Harbin Institute of Technology  
92, Xidazhi Street, Harbin, 150001  
Email: [XXZ7296@163.com](mailto:XXZ7296@163.com)

Hui Li  
College of Tourism and Service Management  
Nankai University  
38 Tongyan Road, Tianjin, 300350  
P.R.China  
Phone: [86] 022 88293348  
Email: [lihuihit@126.com](mailto:lihuihit@126.com)

Sai Liang is Lecture of the Collaborative Innovation Center of Modern Tourism Development and the College of Tourism and Service Management at the Nankai University, China. His current research focuses on e-Tourism, online review and social media.

Xiaoxia Zhang is a Master student in the School of Management at the Harbin Institute of Technology, China. Her research interests cover e-tourism, financial and insurance service

Hui Li is Professor of the College of Tourism and Service Management at the Nankai University, China. His current research focuses on case-based reasoning of tourism, tourism informatics, data mining and electronic commerce.

Corresponding Author: Hui Li.

## **Introduction**

Sharing economy platforms has been one of the hottest research topics in recent years. Taking Airbnb as an example, until 2019, it has covered more than 6 million listings in over 190 countries, and this number is even greater than top 5 major hotel brands combined (Airbnb Newsroom, 2019; Leonardo, 2018). On the one hand, tourists can find diverse choices of properties with lower price in Airbnb, and on the other hand, through registering the idle houses or rooms in Airbnb, the property owners have more chances to earn additional incomes (Liang, Li, Liu, & Schuckert, 2019a; Zervas, Proserpio, & Byers, 2017). However, comparing with hotel booking platforms, guests are more likely to encounter the situations of information asymmetry when booking properties in Airbnb due to the high heterogeneity of properties (Fradkin, Grewal, & Holtz, 2018; HosMan, 2018). It requires the guests to search more information related to both properties and hosts to reduce uncertainty before making booking decisions.

Guests always can obtain information from two channels. One is information generated by marketers or hosts including the basic characteristics of properties and hosts (e.g. the house type, the capacity, the number of bedrooms) as well as textual and graphical descriptions for both properties and hosts. Lots of prior studies have identified the effects of basic characteristics of properties and hosts like price and capacity and gender on guests' booking decisions (Ert, Fleischer & Magen, 2016; Liang, Schuckert, Law & Chen, 2017; Xie & Mao, 2017). Some recent studies like Liang, Schuckert, Law & Chen (2019) as well as Zhang, Lee, Singh & Srinivasan (2017) found providing comprehensive and detailed textual descriptions as well as high-quality image around properties can improve the booking and review posting intention of subsequent guests. Another important information source is reviews posting by other guests. Comparing with marketer or host-generated content (MGC or HGC), guests always perceive user-generated content (UGC) as more credible (Zhu &

Zhang, 2010). However, due to the lower capacity of properties comparing with hotels, it is difficult for Airbnb properties to accumulate a large number of reviews. Accordingly, from the perspective of platform managers, one method to present more complete information to the guests and to reduce information asymmetry is to motivate hosts to post more comprehensive and detailed HGC or MGC such as textual and graphic descriptions (Liang et al., 2019). Another method is to improve the informativeness of each guest reviews which is to motivate the guests to post more informative reviews. Review informativeness was defined as the number of information the guest can get through reading reviews, thus the improvement of review informativeness can save the searching costs of subsequent guests.

Although lots of prior studies have investigated the determinants of review volume and valence in the context of peer-to-peer property rental platforms (such as Liang et al., 2017), to best of our knowledge, no study has focused on identifying the diving factors of review informativeness in such platforms. By collecting a large longitudinal dataset from Airbnb over seven months, the research purpose of this study is to find out how the hosts' decisions to upload the textual descriptions can influence the informativeness of reviews posting by subsequent guests. As one of the early attempts to focus on the determinants of review informativeness in Airbnb, this study should present very important implications to both tourism literature and the peer-to-peer property rental platforms in practice.

### **Airbnb and Data**

Airbnb is one of the world largest peer-to-peer property rental platforms, and it acts as an intermediary between property owners and guests. Property owners can create an account for free, and register their entire houses, rooms or even bed & breakfast in Airbnb. For each of their property, they are requested to present some basic information such as location, amenities and the capacity. Also, property owners are encouraged to provide the detailed textual descriptions about the property (see figure 1) and themselves (see figure 2) such as

personality characters as well as the pictures about the property. Through consulting such information uploaded by hosts, guests can choose to send the booking requests to the hosts, then hosts will decide whether or not to accept the requests. Finally, being similar with other online review websites, after bookings, guests can choose either to post textual reviews with numeric ratings to help the properties and hosts establish the reputation. On the other hand, Airbnb applies two-way reviews system which also allows hosts to also post reviews to their guests to help hosts select high-quality guests. Thus, for guests who want to book a property in Airbnb, the main information sources include textual and graphical contents generated by property owner as well as online review originated from other guests.

Downtown, the best bit of Manhattan. One of, if not the, LARGEST space on Airbnb in NYC. Your Own PRIVATE Bathroom & PRIVATE Bedroom, a Terrace off the bedroom, near to subways/buses, restaurants, bars, real luxury right in the middle of things. Just read our 400+ 5-STAR REVIEWS and you will see why we are SUPER-HOSTS and why you will just love this place, like other guests, I promise.

Si, hablo bien espanol, Français parlé assez bien.

Figure 1. Example of property description in Airbnb

I live in Manhattan. Love to walk, go to quaint restaurants, visit local bars, and drink wine. Love reading, going to small music venues, and stand up comedy.

### **Interaction with guests**

As much or as little as you like. A detailed analysis of the day's adventures or limited to semaphore and sign language -- you choose. Of course, ask us as many questions as you would like about what to see and do in New York (We love to talk about that!)

Figure 2. Example of property description in Airbnb

The research purpose of this study is to investigate how the hosts' decisions to post textual descriptions influence the informativeness of subsequent reviews posting by guests.

Accordingly, we developed clawers based on Python to retrieve information about all properties and hosts in New York City from January 2019 to July 2019. New York City was selected since that it is one of the largest Airbnb market and owns most Airbnb properties in the world. Also, as one of the world most famous tourist cities, it accommodates lots of international tourists. Thus, the diverse range of gusts may further dilute the influence of guest cultural background on our results. A clawer was used to collect all information shown in the profile of each property and host including price, textual descriptions and “Superhost” status. Since that host can choose to change the contents of descriptions at any time, we restarted this clawer at the beginning of each month to trace the dynamic changes of hosts’ decisions to upload descriptions. We also used another clawer to document all posting reviews including reviews posting during our data collection period as well as the historical reviews. To ensure that each property has the documents in each month during our study period, we removed those properties which were newly registered after January 2019 and those properties which have been closed before July 2019. Finally, 1,138,005 reviews posting in 46,004 properties were documented in our database, and a monthly panel dataset covering 46,004 properties belonging to 37,993 hosts over 7 months (from January 2019 to July 2019) was used in our following data analysis.

### **Empirical Strategies**

The main empirical strategy is panel regressions model. The dependent variable in this study is the review informativeness. The detailed equation is as following:

$$\begin{aligned} LnTextLength_{i,t} = & \beta_0 + \beta_1 Des\_w_{i,t-1} + \beta_2 HostDes\_w_{i,t-1} + \beta_3 Control_{i,t-1} \\ & + \mu_i + M_t + \varepsilon_{i,t} \end{aligned} \quad (1)$$

$i$  represents property and  $t$  refers to month.  $TextLength_{i,t}$  refers to the average text length of reviews posting in property  $i$  before month  $t$ .  $Des\_w_{i,t-1}$  and  $HostDes\_w_{i,t-1}$  are two dummy variables representing whether or not the hosts have uploaded the textual

descriptions about property  $i$  and themselves in month  $t-1$ , respectively.  $Control_{i,t-1}$  include all other time varying property and host-related characteristics such as the price, “superhost” status and the number of bedrooms. The detail descriptions for all control variables have been presented in Table 1. We also introduce the property fixed effect and month fixed effects to control for property level time invariant characteristics and some external shocks. Being consistent with prior studies like Zhang, Liang, Li, & Law (2019), we took the logarithm of variables such as the text length of reviews or the price of properties with high standard deviations in the model. Finally, we introduced the first-lagged term of independent variables and control variables in the model to address the reverse causality issues. For example, if we use  $Des\_w_{i,t}$  rather than  $Des\_w_{i,t-1}$  as independent variable, the  $\beta_1$  is significant maybe because the average text length or informativeness of reviews can affect the hosts’ decisions to present property descriptions.

**Table 1. The Descriptions of Variables**

| <b>Variables</b>            | <b>Descriptions</b>  |
|-----------------------------|--|
| <b>Dependent Variable</b>   |  |
| <i>TextLength</i>           | The average text length of reviews   |
| <b>Independent Variable</b> |  |
| <i>Des_w</i>                | Whether or not the Airbnb host present the descriptions about the property |
| <i>HostDes_w</i>            | Whether or not the profile of property contains descriptions about host    |
| <i>Des_Length</i>           | The text length of property description                                    |
| <i>HostDes_Length</i>       | The text length of host description  |
| <b>Control Variables</b>    |  |
| <i>Price</i>                | The nightly rate of the Airbnb property                                    |
| <i>Super</i>                | Whether or not the host has the “Superhost” badge                          |
| <i>Capacity</i>             | The number of guests each property can accommodate                         |
| <i>Bedrooms</i>             | The number of bedrooms of each property                                    |
| <i>Bathrooms</i>            | The number of bathrooms of each property                                   |

|                |   |
|----------------|---|
| <i>Beds</i>    | The number of beds of each property                             |
| <i>MinDays</i> | The minimum number of nights a guest can book for each property |
| <i>MaxDays</i> | The maximum number of nights a guest can book for each property |

We also used an alternative measure of the hosts' description posting behaviour, which is the text length of the textual descriptions. Then the equation (1) can be expanded as following:

$$\begin{aligned} LnTextLength_{i,t} = & \beta_0 + \beta_1 Des\_Length_{i,t-1} + \beta_2 HostDes\_Length_{i,t-1} \\ & + \beta_3 Control_{i,t-1} + \mu_i + M_t + \varepsilon_{i,t} \end{aligned} \quad (2)$$

The only difference between equation (1) and equation (2) is that we change the independent variables from  $Des\_w_{i,t-1}$  and  $HostDes\_w_{i,t-1}$  to  $Des\_Length_{i,t-1}$  and  $HostDes\_Length_{i,t-1}$ .  $Des\_Length_{i,t-1}$  and  $HostDes\_Length_{i,t-1}$  respectively represent the text length of property and host descriptions for property  $i$  in month  $t-1$ . Thus, being differ from  $Des\_w_{i,t-1}$  and  $HostDes\_w_{i,t-1}$ , using the text length of descriptions as independent variables further indicate the efforts for the hosts using to write the descriptions.

## Results and Discussions

Results based on equation (1) were reported in Table 2. The results of specification (1) report the results of model only including the independent variables, while the results of specification (2) and (3) further introduce the control variables, property fixed effects and month fixed effects. The coefficients of  $Des\_w$  and  $HostDes\_w$  are all positive and significant, which shows that uploading the property and host descriptions can improve the average text length of subsequent reviews. Table 3 further reports the results based on equation (2) which use the text length of property and host descriptions as independent variables. The positive and significant coefficients of  $Des\_Length$  and  $HostDes\_Length$  indicate that the efforts for hosts to post the descriptions about properties and themselves are

also positively associated with the informativeness of subsequent reviews. The results of Table 3 are highly consistent with those of Table 2, which shows the good sensitivity and robustness of the results.

The results of independent variables all indicate that presenting detailed descriptions about properties and hosts can motivate the subsequent guests to post more informative reviews. The possible reason may be due to the principle of reciprocity in peer-to-peer property rental platforms. The principle of reciprocity indicates that hosts can induce guests to exert more effort by behaving well themselves (Proserpio, Xu, & Zervas, 2018). When guests perceive that hosts have paid great efforts in presenting descriptions to help them gain more understanding about the properties, they may also exert more efforts to post longer and informative reviews in order to help hosts establish the reputation as well as to help subsequent guests obtain more complete information. On the other hand, Liang et al., (2019a) have noted that more comprehensive and detailed descriptions can help subsequent guests obtain more information and reduce uncertainty then improve their booking and review posting intentions. From this perspective, when guests tend to write a review, gaining more understanding of properties and hosts from descriptions may also lead them to have more abilities to write longer and informative reviews.

**Table 2. Effect of presenting descriptions or not on subsequent review informativeness**

| Variable   | Spec1               | Spec2               | Spec3               |
|------------|---------------------|---------------------|---------------------|
| Constant   | 3.078***<br>(0.031) | 2.560***<br>(0.044) | 2.607***<br>(0.044) |
| Dew        | 0.357***<br>(0.031) | 0.339***<br>(0.031) | 0.340***<br>(0.031) |
| Hosted     | 0.189***<br>(0.008) | 0.182***<br>(0.008) | 0.182***<br>(0.008) |
| Log(Price) |                     | 0.115***<br>(0.007) | 0.114***<br>(0.007) |
| Super      |                     | 0.064***<br>(0.007) | 0.063***<br>(0.007) |
| Capacity   |                     | -0.002<br>(0.003)   | -0.002<br>(0.003)   |

|                    |        |          |          |
|--------------------|--------|----------|----------|
| Bathrooms          |        | -0.020** | -0.019*  |
|                    |        | (0.010)  | (0.010)  |
| Bedrooms           |        | 0.012*   | 0.012*   |
|                    |        | (0.007)  | (0.007)  |
| Beds               |        | -0.006   | -0.006   |
|                    |        | (0.005)  | (0.005)  |
| Minuets            |        | 0.001*** | 0.001*** |
|                    |        | (0.000)  | (0.000)  |
| Log(MaxGuests)     |        | 0.001    | 0.001    |
|                    |        | (0.002)  | (0.002)  |
| Hotel Fixed Effect | N      | Y        | Y        |
| Month Fixed Effect | N      | N        | Y        |
| N                  | 219099 | 219099   | 219099   |

*Note:* Coefficients are shown in the table; standard errors are shown in parentheses. \* $p < 0.1$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

The results of control variables also present some interesting findings related to the determinants of review informativeness. First, properties with higher price and “Superhost” badge are more likely to obtain the informative reviews in the future. Prior studies related to sharing economy platforms always treat price as a proxy of property quality because high-quality properties are more likely to set a high price (Fradkin, 2017; Wang & Nicolau, 2017). Also “Superhost” badge is used by Airbnb managers to identify high-quality hosts (Liang et al., 2017). Thus, it can be explained that guests are more willing to post informative reviews to high-quality properties and hosts maybe also due to the principle of reciprocity. Second, we also find that the number of bathrooms minimum number of nights are associated with the review informativeness of properties.

**Table 3. Effect of the depth of descriptions on subsequent review informativeness**

| Variable            | Spec1               | Spec2               | Spec3               |
|---------------------|---------------------|---------------------|---------------------|
| Constant            | 2.993***<br>(0.022) | 2.461***<br>(0.038) | 2.508***<br>(0.038) |
| Log (Des_Length)    | 0.089***<br>(0.005) | 0.085***<br>(0.005) | 0.085***<br>(0.005) |
| Log(HostDes_Length) | 0.056***<br>(0.002) | 0.056***<br>(0.002) | 0.055***<br>(0.002) |
| Log(Price)          | 0.119***<br>(0.007) | 0.119***<br>(0.007) | 0.118***<br>(0.007) |

|                    |        |                     |                     |
|--------------------|--------|---------------------|---------------------|
| Super              |        | 0.054***<br>(0.007) | 0.053***<br>(0.007) |
| Capacity           |        | -0.004<br>(0.003)   | -0.003<br>(0.003)   |
| Bathrooms          |        | -0.023**<br>(0.010) | -0.022**<br>(0.010) |
| Bedrooms           |        | 0.010<br>(0.007)    | 0.010<br>(0.007)    |
| Beds               |        | -0.006<br>(0.005)   | -0.006<br>(0.005)   |
| MinGuests          |        | 0.001***<br>(0.000) | 0.001***<br>(0.000) |
| Log(MaxGuests)     |        | 0.002<br>(0.002)    | 0.002<br>(0.002)    |
| Hotel Fixed Effect | N      | Y                   | Y                   |
| Month Fixed Effect | N      | N                   | Y                   |
| N                  | 219099 | 219099              | 219099              |

*Note:* Coefficients are shown in the table; standard errors are shown in parentheses. \* $p < 0.1$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

## Conclusion and implications

Prior studies have focused on the determinants of review volume and valence in peer-to-peer property rental platforms (Liang et al., 2017; Liang et al., 2019b). This study takes a step by further looking at the influence factors of review informativeness and quality. We find that more efforts are used to present property and host descriptions, the more informative reviews the hosts will obtain in the future possibly due to the principle of reciprocity. The results of this study provide the theoretical implications to the relevant literature since that it is one of the first attempt to focus on the determinants of review informativeness and quality in peer-to-peer property rental platforms. Thus, this study can present a lot of new insights to future studies focusing on online reviews in peer-to-peer property rental platforms.

As noted in the introduction, the limitation of capacity makes it hard for Airbnb properties to accumulate a large number of reviews, thus an effective method to reduce information asymmetry is to improve the informativeness of each review, which highlight the importance of this study. From this perspective, this study also provides lots of practical

implications to hosts and platform managers. First, the results of this study further verify the benefits of presenting detailed property and host descriptions, which is improving the informativeness of subsequent reviews. Thus, platform managers can apply online designs to motivate hosts to exert more efforts to upload the descriptions to improve the general review quality of the platform. Second, the results of control variables also present lots of implications by letting hosts understand how to improve the review informativeness by directly changing their characteristics, and all these factors are within their control.

This study also has some limitations. First, we only retrieved data from Airbnb due to its representativeness. Thus, future studies can expand the samples to other similar platforms to compare the results with ours. Second, only a single city (New York City) was targeted in this study, thus another possible future direction is to check the robust of our results based on properties from other cities and even other countries to further enrich our findings. Third, future study can also try to analyse the determinants of guest satisfaction by using the sentiment analysis methods. Finally, we mainly use the text length to measure the review informativeness, and future studies can use text mining approaches to calculate other qualitative characteristics of reviews like readability and subjectivity to obtain a more comprehensive picture about how to improve the overall review quality of peer-to-peer property rental platforms.

## References

- Airbnb Newsroom. *About us*. Retrieved from <https://press.airbnb.com/about-us/>
- Ert, E., Fleischer, A., & Magen, N. (2016). Trust and reputation in the sharing economy: The role of personal photos in Airbnb. *Tourism Management*, 55, 62-73.
- Fradkin, A. (2017). *Search, matching, and the role of digital marketplace design in enabling trade: Evidence from Airbnb*. Working Paper. Retrieved from <https://dx.doi.org/10.2139/ssrn.2939084>.
- Fradkin, A., Grewal, E., & Holtz, D. (2018). *The determinants of online review informativeness: Evidence from field experiments on Airbnb*. Working Paper. Retrieved from <http://dx.doi.org/10.2139/ssrn.2939064>
- Liang, S., Li, H., Liu, X., & Schuckert, M. (2019b). Motivators behind information disclosure: Evidence from Airbnb hosts. *Annals of Tourism Research*, 76, 305-319.

- Liang, S., Schuckert, M., Law, R., & Chen, C. C. (2017). Be a “Superhost”: The importance of badge systems for peer-to-peer rental accommodations. *Tourism Management*, 60, 454-465.
- Liang, S., Schuckert, M., Law, R., & Chen, C. C. (2019a). The importance of marketer-generated content to peer-to-peer property rental platforms: Evidence from Airbnb. *International Journal of Hospitality Management*. Doi: <https://doi.org/10.1016/j.ijhm.2019.102329>.
- Leonardo (2018) *The Explosive Growth of Airbnb – An Infographic for Hoteliers* <https://www.vizlly.com/blog-airbnb-infographic/>
- Proserpio, D., Xu, W., & Zervas, G. (2018). You get what you give: theory and evidence of reciprocity in the sharing economy. *Quantitative Marketing and Economics*, 16(4), 371-407.
- Wang, D., & Nicolau, J. L. (2017). Price determinants of sharing economy based accommodation rental: A study of listings from 33 cities on Airbnb. com. *International Journal of Hospitality Management*, 62, 120-131.
- Xie, K., & Mao, Z. (2017). The impacts of quality and quantity attributes of Airbnb hosts on listing performance. *International Journal of Contemporary Hospitality Management*, 29(9), 2240-2260.
- Zhang, S., Lee, D., Singh, P. V., & Srinivasan, K. (2017). *How much is an image worth? Airbnb property demand estimation leveraging large scale image analytics*. Working Paper. Retrieved from <https://ssrn.com/abstract=2976021> or <http://dx.doi.org/10.2139/ssrn.2976021>
- Zhang, Z., Liang, S., Li, H., & Zhang, Z. (2019). Booking now or later: Do online peer reviews matter?. *International Journal of Hospitality Management*, 77, 147-158.
- Zervas, G., Proserpio, D., & Byers, J. W. (2017). The rise of the sharing economy: Estimating the impact of Airbnb on the hotel industry. *Journal of Marketing Research*, 54(5), 687-705.