

## **Social Presence, Telepresence and Customers' Intention to Use Online Peer-to-Peer Accommodation: A Mediating Model**

### **Abstract**

As essential features of cyberspace, social presence and telepresence play critical roles in online commerce. However, it remains unclear whether and how they can shape P2P accommodation customers' purchase intention. This study models the impact of social presence and telepresence as being mediated by three emotional responses – trust, enjoyment and sociability. The model was then tested by structural equation modeling using online survey data comprising 571 Chinese P2P accommodation customers. Results suggest that three dimensions of social presence (social presence of Web, other buyers and sellers) and telepresence indirectly influence customers' purchase intention via different mediating routes. These findings point to a new marketing strategy where consumers' participation can be encouraged by improving presence elements, and thus can be valuable for P2P accommodation operators to retain and develop customer base.

## 1 **1. Introduction**

2 The rise of sharing economy has largely reshaped conventional business models and  
3 consumer behaviors in the travel industry (Cheng, 2016). An increasing number of  
4 consumers are sharing homes, vehicles, and even meals to maximize the economic  
5 benefits of spare assets (Sigala, 2017). Particularly, home sharing, or the peer-to-peer  
6 (P2P) accommodation, has been leading this trend (Lunden and Dillet, 2018). By the end  
7 of 2017, *Airbnb*, the largest P2P accommodation platform, recorded over 3 million users  
8 (Clifford, 2018), and this figure is still undergoing rapid expansion. In China, the total  
9 revenue of online P2P accommodation sector grew by a factor of ten thousand to  
10 CNY4.05 billion (approximately US\$608 million) between 2009 and 2014 (Zhu and Guo,  
11 2016). Local P2P platforms such as *Xiaozhu.com* and *Tujia.com* are so popular in finance  
12 market that they have attracted billions of dollars of investment in recent years.

13 The popularity of P2P accommodation is driven on the one hand by the boosting  
14 market demand for better value-for-money and more authentic experience (Tussyadiah  
15 and Pesonen, 2016), and on the other hand by the rapid development of information and  
16 communication technology (ICT) such as social networking tools and mobile devices.  
17 The Web-based platform serves as the medium that connects the buyer and the seller in  
18 real time, which makes it possible for the transaction to occur without companies as  
19 agents, leading to higher efficiency and lower cost (Kaplan and Haenlein, 2010). Despite  
20 these merits, the Web-based P2P accommodation has inherent weaknesses that are deeply  
21 rooted in ICT, i.e. the elimination of human elements and lean physical cues of the  
22 product/service. These are typically conceptualized as lack of *presence*, including both  
23 *social presence* and *telepresence* (Short et al., 1976; Steuer, 1992), and have been widely

24 examined in various contexts including virtual reality (Steuer, 1992), computer-mediated  
25 communication (Walther, 2011), and e-education (Kim et al., 2016).

26 E-commerce literature has found that lack of presence can inhibit consumers'  
27 participation (Hamari et al., 2016), especially for invisible/intangible purchases where  
28 consumers rely heavily on physical cues to make inferences about the quality of the  
29 service (Bitner, 1992), and their decision-making is highly affected by the face-to-face  
30 interaction with the service provider (Harris and Goode, 2010). The social presence  
31 represents human sensitivity and personalness as perceived in the online platform, and its  
32 absence may hinder customers from forming impression toward the service provider and  
33 developing buyer-seller relationship (Short et al., 1976); meanwhile, the telepresence  
34 determines the degree of immersion into the online environment, and can affect customer  
35 attitudes toward the service/product (Steuer, 1992). Various empirical studies have shown  
36 the profound impact of social presence and telepresence on consumers' purchase  
37 intentions (e.g., Dash and Saji, 2008; Hassanein and Head, 2007; Lee, 2018; Lu et al.,  
38 2016). However, explanatory framework is still lacking in regards to the underlying  
39 dynamics of such impact. This gives rise to the rarely answered question: *how social*  
40 *presence and telepresence shape online consumers' purchasing behavior?*

41 Tourism and hospitality literature has seen increasing amount of studies devoted to  
42 P2P accommodation, examining its traits/uniqueness (Belarmino et al., 2017; Gutiérrez et  
43 al., 2017; Tussyadiah and Zach, 2017), its impact on travel behavior patterns (Tussyadiah  
44 and Pesonen, 2016), as well as the driving factors of its consumer experience, attitude and  
45 purchase intention (e.g. Tussyadiah, 2016; Tussyadiah and Pesonen, 2018). Extant  
46 research frameworks mostly drawn on various experiential elements (e.g. trust, social

47 interaction, enjoyment) to predict P2P consumer behavior intention, and few of them  
48 have modelled the essential features of the Web-based platform such as social presence  
49 and telepresence. It is still unknown *whether these medium-related, “presence” elements*  
50 *can shape consumer purchase intention in a P2P accommodation context.* Answers to  
51 these questions can be critical to P2P accommodation companies that intend to maximize  
52 sales opportunities (Murphy and Kielgast, 2008).

53 This study aims to fill the research voids by examining the role of social presence  
54 and telepresence in shaping consumer behavior in the P2P accommodation context. A  
55 model was proposed based on previous research findings, and the impact of social  
56 presence and telepresence on consumer purchase intention was hypothesized to be  
57 mediated by three emotional responses, namely trust, enjoyment and sociability. This  
58 model was then tested using online survey data comprising 571 Chinese P2P rental users.  
59

## 60 **2. Literature Review**

### 61 ***2.1 Sharing economy and P2P accommodation***

62 Sharing economy, also known as the Peer-to-Peer economy, refers to “a peer-to-peer  
63 based activity of obtaining, giving, or sharing the access to goods and services,  
64 coordinated through community-based online services” (Hamari et al., 2016, p.3). It gains  
65 momentum of development as modern ICT enables consumers to exchange/share their  
66 underused assets via online marketplace (Kaplan and Haenlein, 2010). Scholars concur  
67 that the sharing economy can bring about a series of benefits to consumers, e.g. making  
68 them more resourceful and providing them with more affordable products/services  
69 (Gansky, 2010), satisfying their desire for social communities and interactions (Guttentag,  
70 2015), reducing environmental pressure and contributing to sustainable living (Luchs et  
71 al., 2011).

72 As a leading form of sharing economy, the P2P sharing accommodation is a system  
73 which connects individuals who have excess property capacity, to tourists that have needs  
74 for accommodation, with an online platform maintained by a third-party company  
75 (Botsman and Rogers, 2011). Recent tourism and hospitality studies suggest that P2P  
76 accommodation offers various consumer values including better value-for-money, wider  
77 range of choices, authentic experience, more human contacts, and meaningful  
78 connections (Guttentag, 2015; Tussyadiah and Zach, 2015; Tussyadiah and Pesonen,  
79 2016). It is also found that P2P accommodation has brought various changes to traveler  
80 behavior, as savings from accommodation spending enable more frequent travel, longer  
81 stay and more choices on expenditure (Tussyadiah and Pesonen, 2016).

82 Recently, scholars have moved from simple description of P2P accommodation  
83 platform (or customers) traits, to explaining its customers' attitude and behavior. These  
84 studies mostly draw on the utilitarian aspects of the P2P platform and the personal traits  
85 of the customer when framing the determinants of customer attitude and intention. For  
86 example, Tussyadiah (2016) identified the effects of perceived enjoyment and value on  
87 Airbnb customer satisfaction. Wang and Jeong (2018) found that personal innovativeness,  
88 users' perceived usefulness and trust positively affected user attitudes toward the P2P  
89 accommodation website. Ert et al. (2016) examined the impact of sellers' photos, and  
90 found that impression of these photos could shape customers' trust and their purchase  
91 decisions. Despite these valuable findings, few studies have considered the essential  
92 features of online marketplace, i.e., elimination of human elements and physical cues. The  
93 knowledge body regarding P2P consumer behavior is in need of new insights.

94

## 95 ***2.2 Presence, social presence and telepresence***

96 The concept of *Presence* was first proposed to assess the effectiveness of an information-  
97 communication medium in enhancing user experience, and was later introduced to e-  
98 business research to describe the capability of an online exchange platform to create a  
99 subjective feeling of being immersed in a virtual world that resembles the real  
100 consumption setting (Steuer, 1992; Slater, 1999). Social presence and telepresence,  
101 among various dimensions of presence, have been most widely studied as critical  
102 elements of Web-based shopping platforms (Kang and Gretzel, 2012).

103 Social presence is the social aspect of presence. It measures the extent to which an  
104 online platform enables its customers to experience exchange partners as being

105 psychologically present, and thus to perceive human contact and sensitivity (Biocca et al.,  
106 2001; Short et al., 1976). Technically, social presence is determined by the capacity of  
107 the platform to convey nonverbal cues (e.g., personal, sociable elements) and human  
108 warmth (Gefen and Straub, 2004). From the stance of buyers, social presence of the  
109 platform takes shape in three dimensions. *Social presence of website* refers to the extent  
110 to which the consumer perceives a sense of human warmth and personalness from the  
111 website interface (Short et al., 1976); *social presence of (other) buyers* represents the  
112 extent to which a consumer is aware of the presence or existence of other consumers  
113 (Shen and Khalifa, 2009); and *social presence of sellers* refers to the extent to which  
114 customers perceive the personal characteristics and sensitivity of the service provider  
115 through the online platform (Lu et al., 2016). As buyers often need social cues from the  
116 seller and other buyers to support their purchase decisions, lack of social presence can  
117 hinder the online exchange, as has been identified by various empirical studies (Gefen  
118 and Straub, 2003; Lu et al., 2016; Yoo and Alavi, 2001).

119 Telepresence is the technical aspect of presence, and it forms when the consumer  
120 feels herself/himself present in the virtual shopping environment (Steuer, 1992). High  
121 telepresence can be created by embedding rich media such as video, audio and animation  
122 that increase website vividness and enhance user immersion. Because consumers  
123 generally rely on physical cues to make inference before actually experience a product,  
124 telepresence is critical in shaping purchasing decision in the online context, especially for  
125 experiential products such as accommodation (Weathers et al., 2007). Many empirical  
126 studies have revealed that creating high telepresence for the Web-based exchange

127 platform can enhance customers' perception about the service offering of interest (e.g.,  
128 Hopkins et al., 2004; Lombard et al., 2015).

129 Despite the identified impact of presence on consumer purchase intention, it is still  
130 unknown whether such impact exists in a P2P accommodation setting. Few studies have  
131 examined the underlying dynamics of such impact, and knowledge is still lacking  
132 regarding how such impacts are exerted. These research gaps render the relationship at  
133 the risk of being "fake co-occurrence". Therefore, a theoretical framework that captures  
134 the mediating mechanism between the presence and purchase intention is needed.

135

### 136 *2.3 Mediating factors between presence and purchase intention*

137 The classic cognitive appraisal theory suggests that cognitive  
138 evaluations/appraisals of an event/object can lead to emotions that further cause  
139 behavioral responses (Bagozzi et al., 1999; Johnson and Stewart, 2005). In other words,  
140 external stimuli (such as the presence level of a P2P platform) perceived by consumers  
141 can only shape purchase behavior via certain experiential, emotive elements. A synthesis  
142 of online consumer behavior literature suggests that increased presence creates an illusion  
143 of non-mediated communication, and thereby encourage transaction through enhanced  
144 senses of trust, enjoyment and sociability (Kwon and Sung, 2011; Park and Lee, 2013).

145

#### 146 *2.3.1 Trust*

147 In the e-business context, trust refers to a general attitude of optimism about the  
148 goodwill and capability of the exchange partner or platform to fulfill claimed obligations  
149 (Jones, 1999). Trust has been widely acknowledged as a critical determinant of purchase

150 intention, as it helps reduce risk perception, and thereby increase the consumer's  
151 willingness to engage with the seller (Lauterbach, et al., 2009; McKnight et al., 2004).  
152 This is especially the case in the online context where the interlocutors have very limited  
153 information about each other (Lauterbach et al., 2009). Extant e-commerce studies  
154 commonly find that customer trust toward a company's website positively influences  
155 their purchase intention (e.g., Dash and Saji, 2008; Gefen and Straub, 2003; Ponte et al.,  
156 2015; Van der Heijden et al., 2003). Therefore, it is hypothesized that:

157 *Hypothesis 1: customers' sense of trust towards the P2P accommodation platform*  
158 *positively affects their purchase intention.*

159 Online transaction suffers a lack of customer trust due to the absence of physical  
160 contacts, psychological connection and human warmth (Hassanein and Head, 2007).  
161 Therefore, creating a rich online platform with a high level of social presence and  
162 telepresence can help reduce ambiguity and risk and further enhance trust (Lee, 2018;  
163 Suh and Chang, 2006). The relationship between customers' perceived social presence  
164 and trust has been well documented in information communication literature (e.g., Dash  
165 and Saji, 2008; Gefen et al., 2003). Due to the impersonal, anonymous and automated  
166 nature of e-commerce, it is difficult to validate the information provided by the service  
167 provider (Van der Heijden et al., 2003). The perception of human elements and  
168 personalness, in this regard, can help consumers feel secure about the product or service,  
169 and thus enhance their confidence and trust toward the service provider and the exchange  
170 platform (Cialdini, 2001; Godes et al., 2005). This explains why a number of advanced  
171 ICT tools (e.g., emoji, voice message) have been adopted by online platforms to convey

172 social information and thereby form higher trusting beliefs (Lu et al., 2016), and provides  
173 support for the following hypothesis,

174 *Hypothesis 2: perceived social presence of the P2P accommodation platform*  
175 *positively affects consumers' sense of trust.*

176 Specifically,

177 *Hypothesis 2a: perceived social presence of website positively affects consumers'*  
178 *sense of trust.*

179 *Hypothesis 2b: perceived social presence of (other) buyers positively affects*  
180 *consumers' sense of trust.*

181 *Hypothesis 2c: perceived social presence of sellers positively affects consumers'*  
182 *sense of trust.*

183 A higher level of telepresence enables consumers to visualize the physical  
184 environment through immersing into the artificial one (Park et al., 2010). As consumers  
185 cannot feel the service when purchasing it online, the degree of realism of the website has  
186 significant power to persuade customers' purchase decision (Klein, 2003). In other words,  
187 the more concrete cues associated with the service offering that customers can perceive  
188 from the online shopping environment, the more they would understand the product, and  
189 the higher level of trust they would form toward the P2P accommodation platform (Fiore  
190 et al., 2005; Hopkins et al., 2004; Lee, 2018; Suh and Chang, 2006). Therefore, it is  
191 hypothesized that,

192 *Hypothesis 3: perceived telepresence of the P2P accommodation platform positively*  
193 *affects consumers' sense of trust towards the P2P accommodation platform.*

194

195 2.3.2 *Enjoyment*

196       Enjoyment is another emotion that forms an intrinsic motivation to use a technology  
197 or participate in online shopping (Davis et al., 1992; Koufaris, 2002). It is a critical  
198 reason why people participate in sharing economy (e.g. Godes et al., 2005; Nov et al.,  
199 2010). Conceptually, enjoyment refers to the extent to which the use of a technology (or  
200 participate in an activity) is perceived to be enjoyable in its own right (Davis et al., 1992).  
201 Previous studies have found that the more the customer enjoy visiting a website, the more  
202 positive are their emotions, and the more likely they will return to (or purchase in) the  
203 website (e.g., Lee et al., 2005; Monsuwé et al., 2004). Thus, it is hypothesized that:

204       *Hypothesis 4: customers' sense of enjoyment from the P2P accommodation platform*  
205 *positively affects their purchase intention.*

206       Communication literature has confirmed that increased presence level of a medium  
207 can lead to enjoyable experience (Cyr et al., 2007; Hassanein and Head, 2007).  
208 Customers' perceived enjoyment might be adversely affected if the medium lacks human  
209 elements, which not only eclipses the human warmth of the dialogue, but also decreases  
210 the efficiency of communication (Heeter, 1995). Therefore, it is reasonable to  
211 hypothesize that,

212       *Hypothesis 5: perceived social presence of the P2P accommodation platform*  
213 *positively affects consumers' sense of enjoyment.*

214       Specifically,

215       *Hypothesis 5a: perceived social presence of website positively affects consumers'*  
216 *sense of enjoyment.*

217 *Hypothesis 5b: perceived social presence of (other) buyers positively affects*  
218 *consumers' sense of enjoyment.*

219 *Hypothesis 5c: perceived social presence of sellers positively affects consumers'*  
220 *sense of enjoyment.*

221 Meanwhile, a website with higher degree of realism and sensory richness can deliver  
222 a more enjoyable experience to customers who are more likely to engage into the site and  
223 revisit in the future (Nah et al., 2011). Therefore, it is reasonable to hypothesize that,

224 *Hypothesis 6: perceived telepresence of the P2P accommodation platform positively*  
225 *affects consumers' sense of enjoyment.*

226

### 227 2.3.3 Sociability

228 Sociability is the third emotion that pursued by sharing economy participants  
229 (Tussyadiah, 2016). The P2P platform fosters both host-guest and guest-guest  
230 relationships in various ways including dialogue through direct speaking or eliciting users'  
231 personal stories (Tussyadiah, 2015), which, if continuous and repetitive, can breed  
232 familiarity and intimacy (Roberts and Dunbar, 2011). This offers travelers opportunities  
233 to make new friends, develop meaningful connections, and build up sense of community  
234 (Botsman and Rogers, 2011; Tussyadiah and Pesonen, 2016). Researchers have found  
235 that such sense of sociability plays an important role in shaping purchase intention (e.g.  
236 Hu et al., 2016; Wu and Wang, 2011). Such impact stems from consumers' tendency to  
237 trust their familiar communities/persons when considering making a purchase (Ng, 2013).  
238 Based on this line of argument, it is hypothesized that:

239            *Hypothesis 7: customers' sense of sociability from the P2P accommodation platform*  
240            *positively affects purchase intention.*

241            Sense of sociability originates from constant interaction with individuals within a  
242            community. However, a low level of perceived presence of the P2P website may restrict  
243            users to interact with the host and other consumers. Users need to perceive a certain level  
244            of social presence in a mediated environment to form impression and build social  
245            relationship with others (Dunlap and Lowenthal, 2009). Empirical findings support that  
246            social presence is a significant driver of increased social interaction and satisfying  
247            relationship building in computer-mediated communication (e.g., Dunlap and Lowenthal,  
248            2009; Hwang and Lombard, 2006; Han et al., 2015). A higher level of perceived social  
249            presence of others enhances users' sociability experience in a community which they  
250            enjoy being part of (Hu et al., 2016; Nov et al., 2010). Based on the above line of  
251            reasoning, the following hypotheses are proposed,

252            *Hypothesis 8: perceived social presence of the P2P accommodation platform*  
253            *positively affects consumers' sense of sociability.*

254            Specifically,

255            *Hypothesis 8a: perceived social presence of website positively affects consumers'*  
256            *sense of sociability.*

257            *Hypothesis 8a: perceived social presence of (other) buyers positively affects*  
258            *consumers' sense of sociability.*

259            *Hypothesis 8c: perceived social presence of sellers positively affects consumers'*  
260            *sense of sociability.*

261           Additionally, online platforms with high level of telepresence shorten users' social  
262 distance by decreasing their perceived illusion of mediation. When users perceive high  
263 telepresence from a communication medium, its role as a partition between the users  
264 tends to be diminished, and the users tend to perceive the interactions as more real and  
265 "in person" (Lombard and Ditton, 1997). Thus the following hypothesis is proposed,

266           *Hypothesis 9: perceived telepresence of the P2P accommodation platform positively*  
267 *affects consumers' sense of sociability.*

268

### 269 **3. Methodology**

#### 270 ***3.1 Measurement***

271           Measurement items were adapted from previous studies, with slight re-wording to  
272 capture the uniqueness of P2P accommodation context (see Table 1). Social presence of  
273 website (SPw) was operationalized as the extent to which consumers perceived a sense of  
274 human warmth, sociability and personalness from the P2P website, and was measured  
275 using five items (SPw1 to SPw5). Social presence of (other) buyers (SPb) was  
276 approached as the extent to which consumers were aware of the presence or existence of  
277 other consumers in the P2P website, and was measured using three items (SPb1 to SPb3).  
278 Social presence of sellers (SPs) was operationalized as the extent to which customers  
279 perceived the personal characteristics and sensitivity of the accommodation seller through  
280 the P2P website, and was measured using four items (SPs1 to SPS4). Telepresence (TP)  
281 was defined as single-dimension construct that represents the extent to which the  
282 consumer felt her/himself being in a real purchasing environment, and was measured by  
283 three items (TP1 to TP3).

284           Following Gefen (2000), this study defined trust (TR) as a consumer's assessment  
285 that the platform was trustworthy, and measured it with three items (TR1 to TR3).  
286 Enjoyment (EN) was operationalized as the extent to which the process of using the P2P  
287 accommodation platform was perceived as enjoyable (Davis et al., 1992), and was  
288 measured with four items (EN1 to EN4). Sociability (SC) was operationalized as the  
289 extent to which the P2P platform enabled the user to make new friends and to develop  
290 meaningful connections (Tussyadiah, 2015), and was also measured by four items (SC1  
291 to SC4). Lastly, purchase intention (PI) was defined as the extent to which the user may  
292 expect to use the P2P accommodation platform again in the future, and was measured by  
293 three items (PI1 to PI3).

294

295                                           \*\*\* Please insert Table 1 here \*\*\*

296

297           All the adjusted items were carefully assessed by the author for its face validity and  
298 content validity. As data was collected from Chinese participants, the English statements  
299 were translated into Chinese, and assessed by another two Chinese colleagues to identify  
300 and correct blurredness. Finally, the Chinese items were back-translated into English and  
301 compared with the original English scale. The differences were all addressed before  
302 launching the actual survey. Five-point Likert scales were used to evaluate all the  
303 attributes, with 1 representing complete disagreement and 5 representing complete  
304 agreement.

305

### 306 3.2 Survey

307 The survey was carried out on those who had experience of using P2P  
308 accommodation within most recent three months. The survey questionnaire comprises  
309 four parts. Part I introduces the definition, characteristics and appearance of online P2P  
310 accommodation platform, and involves screen clips of seven most famous P2P  
311 accommodation Webpages. Part II comprises screening questions to exclude those  
312 unqualified respondents, and questions regarding the P2P platform and the trip. Part III  
313 includes measurements for the relevant constructs based on the latest trip involved with  
314 the P2P accommodation platform. Part IV requests for the participants' socio-  
315 demographic information.

316 A pilot study was carried out between August 17 and 20, 2017. Around 30  
317 participants were recruited through Internet to fill the questionnaire and assess its quality.  
318 A few comments were collected, and the questionnaire was revised accordingly. The  
319 main survey was carried out on a Chinese survey platform, *Sojump* ([www.sojump.com](http://www.sojump.com)),  
320 which is currently the largest online survey platform targeted at Chinese respondents. It  
321 has more than 26 million users, and has been adopted by more than 90% of universities in  
322 China (Sojump, 2018). The main survey lasts for around two weeks, and in total 571  
323 samples were collected and analyzed. In order to further ensure the quality of the answers  
324 collected from the online survey, we randomly put anchor questions such as "if you are  
325 reading this question, please select agree to a very large extent". Those answers that do  
326 not pass these test questions were counted as invalid and excluded automatically.

327 In order to minimize common method bias in this one-off survey, survey questions  
328 in Part III were divided into three sub-sections, i.e., the antecedents (social presence,

329 telepresence), mediators (trust, enjoyment, sociability) and outcome (purchase intention).  
330 Respondents that have finished one subsection of questions were invited to take a break  
331 and finish several unrelated tasks before they moved on to the next section. They were  
332 asked to count and input the numbers of objects in pictures 1a, 1b and 1c during the first  
333 break; and the numbers of dots in pictures 2a, 2b and 2c during the second break (see  
334 Figure 1). In this way, respondents' answers to each section of questions can be less  
335 affected by other sections, and thus the instrument-induced bias can be minimized.

336

337 \*\*\* Please insert Figure 1 here \*\*\*

338

## 339 **4. Results**

### 340 *4.1 Descriptive data analysis*

341 Table 2 summarizes the demographic profiles of the respondents. Despite being a  
342 new entrant in China, Airbnb has become a popular platform used by most participants  
343 (31.87%). Xiaozhu.com, a local P2P room sharing platform, ranks second and takes a  
344 share of 30.82%. An overwhelming majority of respondents used P2P accommodation for  
345 holiday (86.7%) and for domestic trips (84.3%). Younger generation aged between 26  
346 and 35 accounted for almost half of the respondents (46.6%). As for income, there was a  
347 significant prominence of respondents (84.2%) earning RMB 3001 to 15000 per month.  
348 Generally, the respondents were drawn from different social classes with diverse travel  
349 experiences, and thus had good representativeness.

350

351 \*\*\* Please insert Table 2 here \*\*\*

352

353 Table 3 presents the statistical distribution of survey items. The skewness values  
354 (ranging between -1.213 and -0.106) and kurtosis values (ranging between -0.955 and  
355 1.890) both fell well within the required cut-off points ( $-2 < \text{skewness} < 2$ ;  $-7 < \text{kurtosis} < 7$ ),  
356 and thus the normality of the data was acceptable (West et al., 1995).

357

358 \*\*\* Please insert Table 3 here \*\*\*

359

#### 360 *4.2 Measurement model*

361 Confirmatory factor analysis (CFA) was conducted to assess the reliability and  
362 validity of the measurement model. The CFA model comprising all the eight constructs  
363 and their items demonstrates acceptable overall fitness ( $\chi^2/\text{df}=4.447$ ,  $p=0.000$ ;  
364  $\text{RMSEA}=0.078$ ;  $\text{GFI}=0.839$ ;  $\text{AGFI}=0.802$ ;  $\text{IFI}=0.849$ ), as suggested by Hu and Bentler  
365 (1999). Factor loadings are close to or above 0.7 for all measurement items. Cronbach's  
366 alpha scores ( $\alpha$ ) and composite reliability (CR) values are all larger than 0.7, indicating  
367 excellent scale reliability for all constructs. The average variances extracted (AVE)  
368 values are mostly larger than 0.5 (except those of SPb and SPs), suggesting good  
369 convergent validity. The AVE values for SPb (0.474) and SPs (0.460), albeit less than 0.5,  
370 exceed 0.4, and thus their convergent validity is also acceptable (Diamantopoulos and  
371 Siguaw, 2000).

372

373 \*\*\* Please insert Table 4 here \*\*\*

374

375 Discriminant validity of the measurement scale was evaluated firstly by comparing  
376  $\chi^2$  differences between the constrained CFA model (where correlations of all paired

377 constructs are fixed at 1.0) and the unconstrained model (where the correlations between  
378 the constructs are freely estimated), and secondly by assessing the measure of heterotrait-  
379 monotrait (HTMT), which was calculated as the ratio of the average heterotrait-  
380 heteromethod correlations (correlations of indicators across constructs measuring  
381 different phenomena) over the average of the monotrait-heteromethod (correlation  
382 indicators within the same construct) (Voorhees et al., 2016). Table 5 presents the results  
383 of both diagnoses. All the 28 sets of  $\chi^2$  differences are significant at the 0.01 level,  
384 suggesting good discriminant validity. This is further confirmed by the HTMT values that  
385 are all lower than the rigorous threshold of 0.85.

386

387 \*\*\* Please insert Table 5 here \*\*\*

388

### 389 ***4.3 Structural equation model***

390 Structural equation modeling (SEM) was performed to test the hypotheses. The  
391 SEM model shows acceptable overall fitness ( $\chi^2/df=3.389$ ; RMSEA=0.065; GFI=0.895;  
392 AGFI=0.829; IFI=0.894). Figure 2 illustrates the result of SEM analysis. Customers'  
393 perceived trust (TR) has significant, positive effect on purchase intention (PI) ( $\beta = 0.325$ ,  
394  $p < 0.001$ ), and thus *Hypothesis 1* is supported. In the meantime, it is significantly,  
395 positively affected by social presence of website (SPw) ( $\beta = 0.212$ ,  $p < 0.05$ ) and social  
396 presence of sellers (SPs) ( $\beta = 0.500$ ,  $p < 0.001$ ), supporting *Hypotheses 2a* and *2c*.  
397 Notably, perceived trust is independent from social presence of (other) buyers (SPb), and  
398 is significantly, negatively affected by telepresence (TP) ( $\beta = -0.445$ ,  $p < 0.001$ ).  
399 Therefore, *Hypothesis 2b* is not supported, and *Hypothesis 3* is in need of further  
400 amendment.

401 Sense of enjoyment (EN) has significant, positive influence on purchase intention ( $\beta$   
402 =0.591,  $p < 0.001$ ), and thus *Hypothesis 4* is supported. Meanwhile, perceived enjoyment  
403 is positively and significantly affected by social presence of website (SPw) ( $\beta = 0.496$ ,  $p <$   
404  $0.001$ ), social presence of (other) buyers (SPb) ( $\beta = 0.484$ ,  $p < 0.001$ ), and telepresence  
405 (TP) ( $\beta = 0.162$ ,  $p < 0.001$ ), providing support for *Hypotheses 5a*, *5b* and *6*. However, it is  
406 free of impact from social presence of sellers (SPs), and thus *hypothesis 5c* is not  
407 supported. Sense of sociability (SC) significantly and positive affect purchase intention ( $\beta$   
408 = 0.125,  $p < 0.05$ ), providing empirical support for *Hypothesis 7*. Meanwhile, it is  
409 positively and significantly affected by social presence of website (SPw) ( $\beta = 0.467$ ,  $p <$   
410  $0.001$ ), social presence of (other) buyers (SPb) ( $\beta = 0.157$ ,  $p < 0.05$ ), and social presence  
411 sellers ( $\beta = 0.254$ ,  $p < 0.001$ ). Therefore, *Hypotheses 8a*, *8b* and *8c* are supported. Notably,  
412 telepresence has no significant effect on perceived social interaction, and thus *Hypothesis*  
413 *9* is not supported.

414

415 \*\*\* Please insert Figure 2 here \*\*\*

416

## 417 **5. Discussion and Conclusion**

418 This study aims to propose and test an explanatory framework on P2P consumer  
419 purchase intention, drawing on the presence theory. The hypotheses test results have  
420 generated a series of interesting findings (Table 6). Generally, all the three dimensions of  
421 social presence and telepresence are conducive to consumer intention to purchase P2P  
422 accommodation, confirming their significant role in shaping consumer behavior. The  
423 effects of social presence and telepresence, however, are mediated by the emotive,  
424 experiential elements including trust, enjoyment and sociability.

425 Increased social presence can indirectly encourage consumer intention to purchase  
426 P2P accommodation. This corroborates and further develops previous findings such as  
427 Gefen and Straub (2003) and Lu et al. (2016), which suggest that lean social presence is  
428 one of the critical constraints that hinder online exchange. Trust is the primary mediator  
429 that connects the presence level and consumer behavior. Enhanced trust can encourage  
430 purchase intention, and it is positively affected by social presence (of website and of  
431 sellers). This confirms the widely confirmed relationships between social presence, trust  
432 and online purchase intention in e-business literature (e.g. Ponte et al., 2015; Van der  
433 Heijden et al., 2003; Dash and Saji, 2008; Gefen et al., 2003). However, social presence  
434 of other buyers does not have significant effect on consumer trust. The reason could be  
435 that in an online commerce context, it is the presence of sellers who provide service and  
436 product (instead of other buyers) and the human warmth of the platform, that secure  
437 consumer feelings (Cialdini, 2001; Godes et al., 2005).

438 Meanwhile, enjoyment can also mediate the effects of social presence on purchase  
439 intention. Consumers who have more enjoyable experience with the P2P accommodation  
440 platform may be more inclined to purchasing the P2P accommodation service. This is  
441 consistent with previous claims that enjoyment forms one of the primary motivations to  
442 use the P2P accommodation, and that enjoyable experience can enhance the consumer  
443 tendency to re-use the platform (e.g., Lee et al., 2005; Monsuwé et al., 2004). Enjoyment  
444 is significantly influenced by social presence of the website and of other buyers, but is  
445 independent from social presence of the sellers. This confirms ICT literature that  
446 increased presence level of a medium can lead to enjoyable experience (Cyr et al., 2006;  
447 Hassanein and Head, 2007), and it also reveals that enjoyable experience is shaped by

448 interaction with the platform and the other buyers, rather than that with the sellers. While  
449 interacting with the sellers, the consumer can be more concerned about the potential  
450 transaction risk, and thus cannot fully enjoy the social experience.

451 Lastly, sense of sociability can mediate all the three dimensions of social presence in  
452 regards to their influence on the purchase intention. Consumers who perceive more  
453 sociability elements are more inclined to purchasing the P2P accommodation. This  
454 echoes previous studies that sociability is the third emotion that pursued by sharing  
455 economy participants (e.g. Davis, et al. 1992; Tussyadiah, 2016). Social presence of the  
456 website, other buyers and sellers can enhance the sense of sociability, which is reasonable  
457 as sense of sociability usually originate from constant social interaction, and is also  
458 consistent with previous findings (e.g. Dunlap and Lowenthal, 2009; Hwang and  
459 Lombard, 2006; Han et al., 2015).

460 Telepresence can also indirectly influence purchase intention, which echoes scholars  
461 such as Lombard et al. (2015). High telepresence level can enhance the consumer  
462 perception of the service offering in a Web-based exchange platform, and can encourage  
463 the participatory intention. However, the effects of telepresence are mixed, as it can  
464 negatively, indirectly affect purchase intention via trust, and positively, indirectly affect  
465 purchase intention via enjoyment, while has no significant effect on sense of sociability.  
466 The positive indirect effect via enjoyment is consistent with previous claims that a  
467 website with higher degree of realism and sensory richness can deliver a more enjoyable  
468 experience to consumers and further encourage their revisit (Nah et al., 2011).  
469 Nonetheless, the adverse influence via trust needs more discussion. Conceptually,  
470 increased telepresence enables consumers to visualize the actual consumption setting and

471 to perceive more concrete cues associated with the accommodation service. E-commerce  
472 researchers envision that more physical cues can help the consumer understand the  
473 product better, and thereby form higher level of trust (e.g. Fiore et al., 2005; Hopkins et  
474 al., 2004; Lee, 2018). But one question is, will consumer trust these cues? This study  
475 asserts that while increased telepresence offers more detailed service cues and more  
476 enjoyable experience, these cues and experiences are perceived more as entertaining,  
477 rather than trustworthy. The consumers could probably enjoy their immersive experience  
478 with the platform, but they will also be more concerned with the potential “trap”  
479 underlying such enjoyment. The insignificant effect of telepresence on sociability, lastly,  
480 can be attributed to the fact that telepresence is related to the physical environment, rather  
481 than a social context.

482

## 483 **6. Implications, Limitations and Future Research**

484 Understanding consumer behavior patterns in the context of P2P sharing  
485 accommodation may not only benefit the platform, but also benefit the individual  
486 entrepreneurs who operate their B&B business on the P2P platform. This study merges  
487 into this dialogue by examining the roles of social presence and telepresence, and thereby  
488 contribute to the knowledge body in the following aspects.

489 First, this study examines and identifies the effect of social presence and  
490 telepresence on consumer purchase intention in the context of P2P accommodation, and  
491 thereby provides an alternative explanatory framework for P2P accommodation consumer  
492 behavior. Previous studies have mostly focused on the experiential elements of P2P  
493 consumption, such as enjoyment, social interaction, to predict consumer intention. They

494 have rarely examined the influence of the platform attributes. Social presence and  
495 telepresence have been regarded as the core features of computer mediated  
496 communication media, but their effects on P2P accommodation consumption remains  
497 under-researched. By incorporating these two fundamental features into P2P, Web-  
498 mediated, virtual shopping context, this study can by large extend the extant knowledge  
499 body.

500       Second, this study reveals the mediating mechanism between presence (including  
501 both social presence and telepresence) and consumer purchase intention, and thereby  
502 answers the question: how presence encourages behavioral intention? E-commerce and e-  
503 education literature has commonly found the presence of a website can enhance user  
504 trust, and further encourage their using behavior. This study further identifies another two  
505 mediators, i.e. enjoyment and sociability, and thus provides a more comprehensive  
506 mediating model.

507       As far as practical implications are concerned, the current research findings may  
508 help P2P accommodation platforms to encourage consumption by imbuing the website  
509 with a high social presence and telepresence to deliver more personal and immersive  
510 experience. This can be achieved by integrating multimedia elements of the interface,  
511 actual interactions or imaginary interactions (Hassanein et al., 2009). First, Web 2.0  
512 capabilities that have been widely utilized are still helpful (Huang and Benyoucef, 2013):  
513 the website design can be polished to enable users to change its characteristics (e.g.  
514 language, page arrangement) or interact with it through its given form; more non-verbal  
515 cues (gestures, humorous content and emoticons) can be added; and timely self-  
516 disclosure of messages (e.g. one's thoughts, feelings, experiences) can be exchanged.

517 Second, P2P platforms can reshape their interface with more AR/VR emerging AR  
518 (augmented reality)/VR (virtual reality) technologies, so as to create a sense of immersion  
519 and improve perceived social presence.

520 One limitations of this study mainly lie on its focus on post-consumption stage of  
521 consumption intention formation. Aside from perceived quality of the websites (i.e. social  
522 presence), the actual experience with the hosts in the accommodation site will also affect  
523 trust building. Future research should further incorporate the customers' attitudes towards  
524 the hosts into the framework. Moreover, survey has its shortcomings in terms of internal  
525 validity. Therefore, future research can be carried out by experimental design, so as to  
526 achieve more robust relationships.

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