Perceived differences in peer-to-peer accommodation before and after COVID-19: Evidence from China (IJCHM-12-2021-1557.R3)

Abstract

Purpose — Based on text content analysis using big data, this research explored differences in guest perceptions of peer-to-peer accommodations before and after COVID-19 to provide suggestions for the development of these properties in China post-pandemic.

Design/methodology/approach — A guest perception dictionary was established by collecting Ctrip customer reviews of peer-to-peer accommodations. After data cleaning, thematic word analysis and semantic association network analysis were used to explore perceptions and thematic differences before and after COVID-19.

Findings —This research constructed a multidimensional framework of guest-perceived values for peer-to-peer accommodation in the context of the pandemic. The findings showed that: (1) the emphasis on functionality in peer-to-peer accommodation changed. People tended to choose entertainment facilities delivering a stronger sense of experience; (2) perceived emotional values associated with peer-to-peer stays were more complex; (3) perceived social values decreased, host-guest interactions were reduced, online communication became a stronger trend, and perceived conditional value was enhanced; people changed their destination selections and perceptions of environmental health, service, and physical risks increased; (4) tourist preferences for types of experiences changed; (5) perceived conditional value was reflected in perceived risks, and the perceptions of environmental health, service, and physical risks increased.

Originality/value —This research constitutes the first attempt to explore the perceptual differences for peer-to-peer accommodations before and after COVID-19, based on an extensive data set of online reviews from multiple provinces of China.

Keywords: COVID-19; post-pandemic; pre-pandemic; peer-to-peer accommodations; perceptions; experiences; big data analysis

Paper type Research paper

1. Introduction

The sharing economy plays a significant role in the hospitality and tourism industry. It has the characteristics of platformization, being widely distributed, openness, and high efficiency, which significantly improve resource allocation efficiency in hospitality and tourism. Peer-to-peer accommodation bookings have been booming in recent years. The rise of the sharing economy reshaped the traditional business model and consumer behavior (Ye *et al.,* 2020).

However, the rapid spread of COVID-19 caused severe social, psychological, and economic losses worldwide (Xu *et al.,* 2021), especially in hospitality and tourism. From January to October 2020, the number of international tourists worldwide decreased by 900 million compared with the same period in the previous year (Stefania, 2021). COVID-19 triggered perceptions of infection risk, which generated negative emotions such as fear and anxiety and directly affected travel intentions and decision-making (Feng, 2021). COVID-19 influenced the peer-to-peer accommodation industry particularly negatively (Zhang *et al.,* 2021). Tourist purchase behaviors with peer-to-peer accommodation were restricted in several ways. During the pandemic, decision-making was influenced by complex and multiple factors, such as destination environments and people's preferences (Jang *et al.,* 2021). COVID-19 influenced people's choices of where to visit during trips. For example, choices of accommodation types were influenced by physical distance (Bresciani *et al.,* 2021), which significantly impacted peer-to-peer accommodation services. The pandemic also had a considerable impact on psychological perceptions and behavioral activities. Perceptions of risk and safety increased compared to pre-COVID-19 levels, influencing preferences and destination selection (Jang *et al.,* 2021). Therefore, this research explored the differences in guest perceptions of peer-to-peer accommodation experiences before and after COVID-19.

The research addressed the following questions: (1) after the outbreak of COVID-19, did tourist perceptions of peer-to-peer accommodation experiences change? If yes, in what ways? (2) what were the perceived differences before and after the pandemic?

2. Literature review and theory development

2.1 Impact of COVID-19 on peer-to-peer accommodations

The sharing economy is increasingly attracting the attention of scholars and industry practitioners (Bresciani *et al.,* 2021). As an important growth point of the sharing economy, peer-to-peer accommodation has become a widely discussed topic (Hesse and Vílchez, 2021). In the past decade, it has grown tremendously in the hospitality and tourism industry. Peer-to-peer accommodation is defined as "the space suitable for overnight stays sold by a non-commercial provider (host) to an end-user (guest) for short-term use through direct interaction between host and guest" (Dolnicar, 2019). The host-guest interaction and sense of experience are the advantages (Gerwe, 2021) and have become a more significant attraction for people to enhance their travel memories (Tussyadiah and Pesonen, 2016).

However, the arrival of COVID-19 had a disastrous impact on the industry, reducing the demand for peer-to-peer services. Scholars believe the pandemic has seriously threatened the industry and changed the original status quo (Bresciani et al., 2021). Many anti-pandemic measures limited the industry's growth (Gerwe, 2021). The social and experiential advantages of peer-to-peer accommodation before COVID-19 turned into disadvantages. However, some predicted positive impacts from COVID-19, believing that the pandemic spurred the reform of peer-to-peer accommodation (Gerwe, 2021).

Worldwide public health crises fundamentally affect production and consumption patterns (Mont *et al.,* 2021). Previous research studies on the impact of COVID-19 on peer-to-peer accommodation were carried out from different perspectives, focusing on the perceptions and responses of platforms, hosts, and guests. First, some scholars analyzed the impact on peer-to-peer accommodation platforms and their coping strategies. Google Trends data showed a significant decline in search intensity for peer-to-peer accommodations (Batool *et al.,* 2021). In response to the unstable environment, many platforms developed health standard policies and supported social distancing (Mont *et al.,* 2021). Some platforms, such as Airbnb, set up funds to mitigate the financial losses of hosts caused by cancellations (Batool *et al.,* 2021). Second, researchers examined the impact on the hosts and analyzed the

host responses to the pandemic. One study revealed the distinctions in host responses to the pandemic (Farmaki *et al.*, 2020), while another showed the influential factors in host decision-making in COVID-19 (Zhang *et al.,* 2021). Additionally, some scholars examined the happiness of hosts under the circumstances, analyzing their stress and coping strategies (Xu *et al.,* 2021). Third, a few studies reviewed the impact of the pandemic on consumer perceptions. COVID-19 caused a sharp decline in peer-to-peer accommodations, which affected tourists' needs, perceptions, and behaviors (Hu et al., 2021). COVID-19 reduced tourist expectations for social interaction and increased social distancing, leading to fewer bookings. This situation contrasted with pre-COVID-19, during which tourists enjoyed social interactions for enhancing experiences (Bresciani *et al.,* 2021). Previous research suggested that service perceptions were modified and showed that guest expectations, perceptions, and preferences for hotel services changed post-COVID (Hu *et al.,* 2021). However, guest perceptions of peer-to-peer accommodation were largely ignored, although there were many studies about the changes in perceptions of traditional accommodations caused by COVID-19. Few researchers conducted in-depth studies on the changes in peer-to-peer accommodation perceptions after COVID-19 (Gerwe, 2021). Therefore, this study researched tourists' perspectives to explore perceptual changes concerning peer-to-peer accommodation.

2.2 Research on consumer perceived value and tourist perception

Perceived value has received extensive attention from researchers since its emergence in the 1990s (Fernández and Bonillo, 2007). Zeithaml et al. stated that perceived value was the overall evaluation of product utility generated by consumers based on their perceptions of the product. Differences in perceived value depend on product types and consumer characteristics (Zeithaml, 1988). Perceptions are reflected in consumption and influence consumer choice behavior (Sheth et al., 1991). Customer value can be divided into two categories: Perceived and expected customer value (Albert Graf, 2008). The literature review found that their expected value drives customer perception, and value also becomes a kind of perception evaluation. Therefore, the analysis of perceived value helps us further understand customers' perceptions of products. As a theoretical basis, perceived value has been widely

used in the tourism and hospitality industry (Williams and Soutar, 2009; El-Adly, 2019; Ryu et al., 2010; Raza *et al.*, 2012; Gallarza and Gil,2006; Al-Sabbahy, 2004; Yang and Mattila, 2016; Worsfold *et al.*, 2016). The peer-to-peer accommodation industry is an industry that focuses on customer perception to serve them better. The application of perceived value theory can better help the industry to understand customer perception and value needs, but there is little research on the application of perceived value theory to the peer-to-peer accommodation industry.

Perceived value refers to the overall assessment of product utility by customers, and it can also be influenced by objective factors such as quality and price (Zeithaml, 1988; Holbrook, 1994). The composition of perceived value is multidimensional, and previous scholars have constructed various framing systems. Zeithaml (1988) identified four common uses of the term: low price, whatever I want in a product, the quality I get for the price I pay, and what I get for what I give. Sheth et al. (1991) identified five consumption values, and these were functional, social, emotional, epistemic, and conditional. Sweeney and Soutar (2001) developed the perceived value scale based on the former's work and identified four dimensions: emotional value, social value, and two types of functional value (price/value for money and performance/quality). Following these previous studies, this research also emphasizes the multidimensional nature of perceived value and recognizes groups of dimensions by their cognitive, affective, and social nature (Gallarza, 2016). A new framework is developed for guests' perceived value of peer-to-peer accommodations. The emergence of significant health and safety crisis events affects people's consumption expectations and patterns. Also, they influence perceived value orientations; thus, the effect of COVID-19 was considered in this research.

2.3 Research on tourist perceptions of peer-to-peer accommodation

The concept of perception comes from psychology and refers to the knowledge we perceive or acquire (Graham and Columbus, 1869). Tourist perception refers to subjective cognitive feelings of people on products and services based on experiences in hospitality and tourism. Several prior studies have been carried out on perceptions of peer-to-peer

accommodation, focusing on the following four aspects.

First, there is research on the overall perceptions of tourists about peer-to-peer accommodations that analyzes experience attributes through various research methods. This research shows that the content of tourist perceptions of peer-to-peer accommodation is complex, and multiple factors affect perception. Zhu *et al.* analyzed the online comments of Airbnb guests and found that hosts, locations, and amenities were the main dimensions of guest experience (Zhu *et al.*, 2021). Sutherland *et al.* extracted 43 topics that affected perceptions of peer-to-peer accommodation, dividing them into several clusters (Sutherland and Kiatkawsin, 2020). Using fsQCA, Pappas *et al.* concluded that the price-quality nexus, risk perspective, and social interaction affected perceptions of peer-to-peer accommodation (Pappas, 2019).

Second, researchers uncovered perceived service failures and recommended service improvements in peer-to-peer accommodation. Chen *et al.* found that the service failures perceived by guests were in four clusters: host‑guest interactions, customer service, room facilities, and payment (Chen and Tussyadiah, 2021). Some explained the critical service attributes sought by guests (Tussyadiah and Zach, 2015) and analyzed unsatisfactory service encounters through reviews, such as lack of hot water, poor sleep quality, and unpleasant check-ins (Lee and Tse, 2020).

Third, scholars conducted comparative studies on different perceptions of tourists in peer-to-peer accommodation. Zhang *et al.* compared the perceptions of Chinese and foreign English-speaking guests, finding that recommendations and booking flexibility were unique perceptions among foreign tourists; the Chinese were more concerned about revisits and cleanliness (Zhang and Fu, 2020). Analyzing comments shared by Chinese guests on the platforms, previous research discovered differences between those who lived in private rooms and those who were in complete apartments. Guests in private rooms cared about security, privacy, value for money, and social interactions with their hosts; people in complete apartments were more concerned about facilities (Guo *et al.*, 2019). Other studies investigated differences in tourist motivation and perception of choices between traditional and peer-to-peer accommodation industries (Belarmino *et al.*, 2019) and compared the

advantages and disadvantages of the two (Birinci *et al., 2018*)

Fourth, researchers explored the influence of peer-to-peer accommodation perceptions on destination image perceptions. The findings showed that peer-to-peer accommodation significantly affected perceptions of the general destination image (Kuhzady *et al., 2020*). Peer-to-peer accommodation provides people with intimate experiences, which improves the authentic and cultural experience, enhancing destination image perceptions (Shi *et al., 2019*). In addition, previous studies have mentioned that peer-to-peer accommodation's social and economic appeal influences destination choices and the range of activities in which people engage (Tussyadiah and Pesonen, 2016).

There is substantial research literature on peer-to-peer accommodation perceptions in Western countries. A survey conducted with more than 800 tourists in Canada found that Airbnb's practical attributes were the most attractive to consumers (Guttentag et al., 2018). A qualitative study involved semi-structured interviews with entrepreneurs in the sharing accommodation sector in Petra, Jordan. The findings revealed that positive host-guest relationships were a critical factor in spurring the growth of sharing accommodation businesses (Alrawadieh and Alrawadieh, 2018). Adopting a sequential mixed-methods approach, a comprehensive conceptual model was developed in which motivations, price value, enjoyment, and home benefits significantly influenced overall attitudes toward Airbnb (So et al., 2018). However, there are relatively few pre-and post-COVID-19 comparative studies on customer perceptions in China. Therefore, this research explored changes in perceptions of peer-to-peer accommodation among Chinese consumers before and after the pandemic.

2.4 Research on perceived risks

The global outbreak of COVID-19 triggered unprecedented public panic, fundamentally disrupting the hospitality and tourism industry (Zenker *et al., 2021*). Infectious diseases are one of the most common perceived health risks for tourists (Teeroovengadum *et al., 2021*), and there have been several outbreaks of influenza worldwide. However, the COVID-19 pandemic has caused the most significant impact, and researchers are paying more attention

to the perceived risks to tourists.

Previous research has shown that perceptions of sharing accommodations are multifaceted (Chi et al., 2021), and they can be divided into positive and negative viewpoints (Alrawadieh and Alrawadieh, 2018). Positive perceptions encourage purchase intentions (Ye et al., 2020) and enhance guest satisfaction (Kim and Yoon, 2016). However, negative experiences increase risk perceptions and affect purchase intentions and the reputation of sharing accommodation (Tian et al., 2022). The key factors affecting guest risk perceptions of sharing accommodation have been identified.

Perceived risk research has established a tradition in consumer behavior (Mitchell, 1999). The theory of risk perception originates from cognitive psychology and has attracted much attention from the hospitality and tourism industry since the 21st century (Korstanje, 2009). The definition of perceived risk is vague, and different scholars hold dissimilar views. Bauer believed that perceived risk was a two-dimensional structure, including uncertainty and adverse consequences (Dowling, 1986). Other scholars considered perceived risk to be "the uncertainty about the possible negative consequences of using a product or service" (Huang et al., 2019). Discussion of the relationship between perceived risk and uncertainty is particularly prominent. Knight proposed that risk has a known probability while uncertainty exists when knowledge of a precise probability is lacking, but the two concepts are considered consistent in marketing (Mitchell, 1999). Perceived risk represents uncertainty when people make choices, and researchers call this choice uncertainty. Perceived risk is multidimensional, and the classic dimensions include financial, performance, physical, psychological, and social risks. In consumer behavior, there are seven perceived risks (financial, functional, physical, social, psychological, satisfaction, and time) (Reisinger and Mavondo, 2005).

Studies show that perceived risks do affect not only perceived value (Snoj *et al.,* 2004) but also affect travel decisions (Jang *et al.,* 2021) and overall perceptions of travel experiences (Pappas, 2019). In addition, travel intentions are determined by the degree of travel anxiety and the safety of tourists (Zenker *et al.,* 2021). During COVID-19, there was a focus on the impacts of tourist perceived risk levels and social measures on dining out and

hotel booking intentions (Kim and Liu, 2022).

The sharing economy presents many potential risks under such circumstances (Yuan *et al.,* 2021), and people's choices are uncertain, which affects purchase decisions. Compared with traditional hotels, peer-to-peer accommodation has more significant variability and uncertainty (Yuan et al., 2021). Peer-to-peer accommodations offer relatively non-traditional products and services (compared to traditional accommodations), and the amount and quality of information available are limited, increasing the uncertainty of choice for tourists and thus increasing perceived risks, making the perceived risks more significant (Lee, 2020). Previous research finds that peer-to-peer accommodation risk perceptions are related to social, physical, performance, and convenience. These risks include product performance, time/convenience, and security (Birinci *et al.,* 2018). In addition, the lack of service standards (Birinci *et al.,* 2018), information asymmetry between hosts and guests (Yuan *et al.,* 2021), user privacy disclosure, and lax supervision exacerbate the perceived risks to guests. Thus, perceived risk affects consumer choices and attitudes towards peer-to-peer accommodation. Psychological and physical risks hinder tourists from purchasing peer-to-peer accommodation products (Huang *et al.,* 2019). Psychological risk is the loss of self-image attributed to the purchase or use of goods, while physical risk involves safety and potential dangers associated with the purchase or use of goods (Lee, 2020).

With COVID-19, and faced with greater uncertainty of travel, the perceived risks of peer-to-peer accommodation increased. The perceived risks caused by COVID-19 were a crucial factor in preventing people from traveling to destinations and booking peer-to-peer accommodation products (Chen and Tussyadiah, 2021). Before COVID-19, frequent host/guest interaction was considered an effective way to enhance host/guest trust and reduce uncertainty and perceived risk. That no longer seems to apply. With the ongoing impacts of COVID-19, has the perceived risks of peer-to-peer accommodation changed in the post-COVID-19 context compared to pre-COVID-19? What are the major perceived risks? These questions were the focus of the research methodology that is now described.

3. Research methodology

3.1 Research design

Big data methods for analyzing consumer behavior using massive online reviews have proven relatively reliable, especially in the hospitality and tourism industry (Schuckert *et al*., 2015). Many researchers have conducted research based on online reviews of peer-to-peer accommodation. These have explored and analyzed accommodation experiences (Zhang *et al*.,2020), service quality (Chen *et al*.,2021), and preferences (Serrano *et al*., 2021) with the help of semantic analysis methods and text mining software.

In this research, the design and the technical details are shown in Figure 1. Text mining technology was used to extract customer reviews on peer-to-peer accommodation from Ctrip, China's largest online tourism review website. A tourist peer-to-peer accommodation perception data set was assembled from the platform. The data were pre-processed, and natural language processing (NLP) was employed to clean the data. Text analysis was carried out on the after-cleaning data, including statistical analysis of high-frequency and burst words, and the social semantic network was analyzed and visualized. Finally, the results were summarized, and research findings were reported.
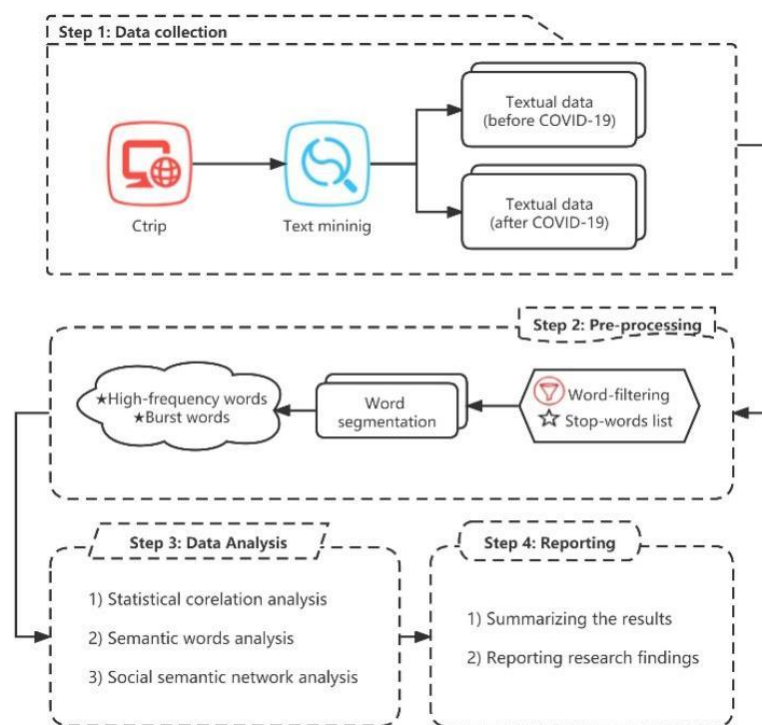

Fig. 1 Analysis of customer peer-to-peer accommodation reviews

3.2 Data collection

This research took China as its context. China's local and international peer-to-peer accommodation markets were expanding before the pandemic. Some scholars analyzed guests' peer-to-peer accommodation experiences in China (Guo et al., 2019; Lyu et al., 2019). Peer-to-peer accommodation has increasingly gained popularity in China, and its rapid growth means the P2P accommodation market has many research opportunities worth exploring (Zhang et al., 2020). Scholars found evidence by studying online consumer reviews from Western nations. However, there are currently few such studies for developing countries, particularly concerning Chinese consumers (Guo et al., 2019). The Chinese government thoroughly avoided further infection through comprehensive information release strategies (Lu et al., 2020, p. 19) after the outbreak of COVID-19. Peer-to-peer hosts are learning to recover from COVID-19 and restart their businesses (Zhang et al., 2021, p. 19).

Ctrip was selected as the data source website. As the largest online travel review website in China, Ctrip's peer-to-peer accommodation business is widely distributed in China (including every city within 31 provincial administrative regions in Mainland China), which is diverse and complete. Ctrip allows consumers who have purchased on the platform to rate and review and is the market leader in connecting suppliers and customers via B2C (Tao et al., 2022; Ye, Law, and Gu, 2009; Ye, Zhang, and Law, 2009). Ctrip is China's largest Internet travel platform, but it is more than that. There are not just satisfied and dissatisfied consumers writing online reviews; as a virtual tourism community, it hosts participants with common interests. These include travel influencers who not only write reviews and address confusion but also share helpful guides for destinations and accommodation (Chen et al., 2021). Therefore, it was reasonable and appropriate to choose Ctrip as the data collection website for studying the perceptions of Chinese tourists.

Two rounds of data collection were conducted in October 2019 and October 2021, respectively, and the reviews of tourists from 31 provincial-level administrative regions in Mainland China were extracted. A crawler program was designed using Python programming and extracted considerable information, including text reviews. To ensure the comparability and timeliness of data, online review information was collected from January 2019 to

October 2021.

3.3 Data pre-processing

This stage involved data cleaning and preliminary analysis. First, repetitive reviews and emoticons were removed. Second, the Jieba tool in Python was used to perform word segmentation, transforming the text into words. Then, the texts were filtered by adding stop word lists. The stop word lists combined the four most commonly used. Finally, 1,986,270 reviews remained. Taking the time when the first COVID-19 case was discovered (December 12, 2019) as the time node, the data were divided into pre-COVID-19 and post-COVID-19 parts for comparative analysis. The pre-COVID-19 reviews spanned from January 1, 2019, to December 12, 2019, with a total of 850,290 reviews; the post-COVID-19 epidemic reviews were from December 12, 2019, to October 15, 2021, with 1,135,980 reviews.

3.4 Data analysis methods

3.4.1 Statistical correlation analysis

Correlation analysis was used to explore the impact of COVID-19 on peer-to-peer accommodation and to determine whether people's attention to the pandemic affected their willingness to choose peer-to-peer accommodation products. The degree of people's attention to the disease was obtained by the daily search volumes of the word "COVID-19" in the Baidu Index, and the number of tourist reviews reflected the willingness to choose peer-to-peer accommodation products after the COVID-19 outbreak. SPSS software was used to analyze the relationship between people's attention to COVID-19 and willingness to choose peer-to-peer accommodation based on standardized data processing.

3.4.2 Difference analysis of thematic words

Thematic words have a precise meaning, conciseness, timeliness, and rich information. The Python algorithm calculated the frequency of all words after pre-processing. A tourist perception dictionary of peer-to-peer accommodation was established to make the analysis more centralized. First, 10,000 thematic words were extracted before and after COVID-19

and combined. The second was the process of content analysis. Three researchers analyzed the selected thematic words, and the words related to the perceptions and experiences of peer-to-peer accommodation were extracted from the thematic words and classified into different groups. To ensure the validity and reliability of classification, the three researchers independently carried out their work and marked uncertain words to be discussed later. Then the classification results were compared, and the researchers replaced synonyms. The final perception dictionary of peer-to-peer accommodation contained 436 words, classified into the six topics of amenities, transportation/location, host-guest interaction, service experience, environmental perception, and perception evaluation. The differences in perceptions before and after COVID-19 were analyzed by comparing the high-frequency words.

Due to the large number of reviews captured before the pandemic, burst degree was used to analyze the changes in perceptions after the COVID-19 pandemic. The formula employed is shown in (1), representing the burst degree of words in the review texts.

$$\mu = \frac{\frac{X_i}{\sum X_i} - \frac{x_i}{\sum x_i}}{\frac{x_i}{\sum x_i}}$$

(i=1,2,3......)

In the above formula, μ represents the burst degree of words; X_i represents the frequency of words after COVID-19; $\sum X_i$ represents the total frequency of words appearing after COVID-19; x_i is the frequency of words before COVID-19, and $\sum x_i$ is the total frequency of words after COVID-19.

By calculating the burst degree of words, the burst words were summarized in post-COVID-19 and categorized into different groups to contrast the increases or decreases of the content, thus obtaining the differences in consumer perceptions, and then the reasons for the differences were explored.

3.4.3 Difference analysis of social semantic network

The semantic co-occurrence matrix was used to explore the relationships among words and infer valuable information from them (Hou *et al.,* 2019). Social network analysis is a

common method in social science research, and the "relationship" among words is considered the basic unit of analysis. Thematic words are the nodes in the relationships in the network, and the connection between nodes (i.e., edges) embodies the strength of the relationships of co-occurrence words. The social network diagram was formed based on the edges and the connection of nodes.

Based on comparing thematic words before and after the pandemic, words with high burst degrees were obtained, and the co-occurrence word matrix was obtained through Python. The matrix was imported into Gephi in CSV format to construct an undirected network. Then, the social network characteristics were analyzed, including network density, modularity, centrality, and other indicators. Finally, the text format files were transformed into visual networks to obtain the interrelationships among perceived contents.

4. Data analysis and results

4.1 Results of correlation analysis

Two indicators were selected to explore the impact of COVID-19 on peer-to-peer accommodation: the outbreak daily Baidu index and the number of peer-to-peer accommodation comments per day. The daily Baidu index reflected fluctuations in concerns over COVID-19, and the more serious the pandemic, the higher the Baidu index. The daily number of peer-to-peer accommodation reviews reflected the occupancy of peer-to-peer accommodation, and the more reviews, the better the occupancy. The results of the visual analysis are shown in Figure 2, and there was a negative correlation between the two indicators. This result suggests that the more severe the concerns with COVID-19, the fewer people stayed in peer-to-peer accommodation. The data were imported into SPSS software for correlation analysis, and the results showed that the correlation between the two indicators was -0.579** ($p < 0.01$). The results of the visual analysis were verified.
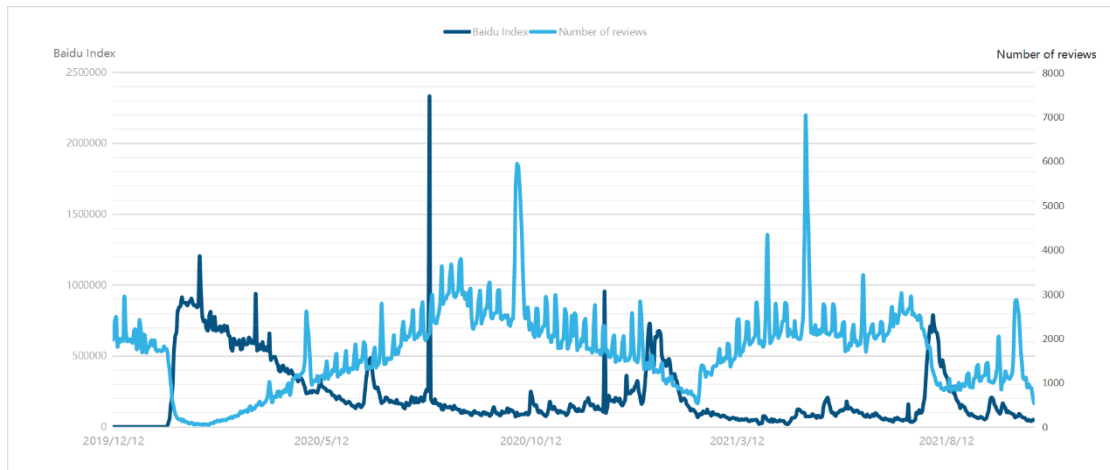
Fig. 2 Correlation between the COVID-19 attention and number of comments.

4.2 General peer-to-peer accommodation perceptions of guests

4.2.1   Guest perception analysis by burst words

The results for high-frequency words based on the perception dictionary were as follows. In general, whether before or after COVID-19, high-frequency perceptions revolved around amenities, transportation/location, host-consumer interaction, service experience, environment perception, and perception evaluation. However, in the analysis of thematic words, it was found that the frequency ranking of some words increased sharply after the pandemic. Therefore, an analysis of burst words was conducted to analyze the differences in perception contents further.

As shown in Figure 3, some burst words were still included in the original classification topics, such as environmental perception, host-guest interaction, facility perception, service perception, and perceived evaluations. However, new perceptual themes emerged, such as perceived risk, room features, surrounding convenience, tourist destinations, and experiences.

After COVID-19, the perceived risks and experiential perception of peer-to-peer accommodation increased, and experience perceptions of the surrounding environment strengthened. On the contrary, there was less host-guest interaction in peer-to-peer accommodation, less attention from customers to the internal state of accommodations (such as whether it is newly renovated or not), and less attention to the convenience of the location.

In addition, during the experience process, the perception of travel destination choices,

housing amenities, services, and accommodation during the experiences changed. Customers had a more pronounced perception of scientific and technological amenities. On the contrary, before COVID-19, people's reviews focused on the basic functional facilities in the kitchen and bedroom areas. Preferences for participating in experiences gradually shifted from indoor activities with high concentrations of people before the pandemic to outdoor activities with family and friends.
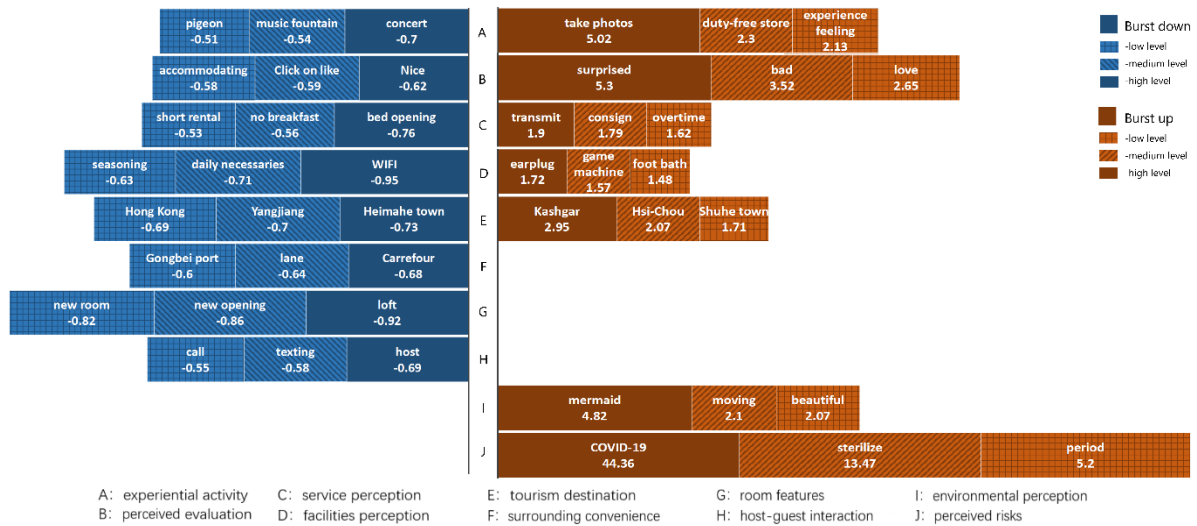

Fig. 3 Burst words perceived by guests in peer-to-peer accommodation after COVID-19.

4.2.2 *Perception analysis of semantic networks*

Social network analysis builds network structures based on words and their connections, from which co-occurrences and connections among words can be analyzed, as well as the community division of the whole network. To clarify the research results, the co-occurrence matrix of burst words was obtained and imported into Gephi for network analysis. The semantic network diagrams shown in Figures 4 and 5 were obtained, respectively, representing the semantic association differences of customers for peer-to-peer accommodation products before and after COVID-19.

Both are fully connected networks because isolated nodes were excluded. The network density shows that the content of guest reviews after the pandemic was more concentrated than before. Also, the number of post-pandemic communities was greater than before, indicating that themes constructed by post-pandemic words were prominent and closely

related to each other, while perceptions of peer-to-peer accommodation content networks were relatively loose. According to the word co-occurrence in Table 1, before the pandemic, perceptions were focused on the state and amenities of the room itself and evaluations of the hosts, while the post-COVID focus was more on the environment, health, and the perception of risks brought by the pandemic. The analysis of centrality (betweenness centrality) also validated the above-mentioned.

Table 1. Comparison of co-occurrence words and centrality before and after COVID-19.

Word co-occurrence (before)	Frequency	Word co-occurrence (after)	Frequency
Host-house	1518	Sterilize-Measure	896
Ornament-accommodating	804	COVID-19 -Sterilize	723
New room- new house	415	Reply-Message	334
Bed opening - ornament	360	Sterilize-Period	325
Bed opening - accommodating	336	Gao town-Starlight	231
House-market	323	Towel-Trash	225
Beauty-house	318	Sterilize-anti-epidemic	213
Humble Administrator Garden - Lion Grove Garden	315	Sterilize-Towel	185
Beijing-house	315	Protection-measure	176
Humble Administrator Garden -Pingjiang	294	Duty-free store-parks	173
Words(before)	Centrality	Words (after)	Centrality
Host	70.84	COVID-19	86.92
House	70.84	Experience feeling	79.93
Beautiful landlady	41.71	Towel	74.69
Extra bed	40.11	Trash	69.33
Mansion	30.21	Reply	56.66
Seasoning	29.80	Sterilize	54.35
Beijing	29.63	Bad product	52.59
Open business	28.06	Contactless	34.42
Sofa bed	27.14	Have been here	27.75
Pots and pans	26.12	Lawn	25.68

In the visualization process, the layout algorithm of ForceAltas2 was used in Gephi to draw the network diagram. Compared to other layout algorithms, ForceAltas2 has a better measurement quality. The words with larger nodes indicate that guests paid more attention to them. In Figure 4, "house" is the core node, and some words are also grouped into small communities, such as some words describing hosts and pointing out some travel destinations. However, most of the content of guest perceptions was centered on the house itself, and the independence between themes was not prominent. In contrast, the semantic themes of the

post-COVID network represented in Figure 5 are more pronounced, among which the most prominent communities are centered on "sterilized" environmental health perception. The right side (mainly purple nodes) shows the general perceptions of customer experience, and the left side (mainly red nodes) shows the general perceptions of customer service attitudes, indicating that after the pandemic, perceptions of peer-to-peer accommodations shifted from the state and functional characteristics of the accommodation itself to more concerns and requirements for environmental hygiene, experience acquisition, and service attitudes.
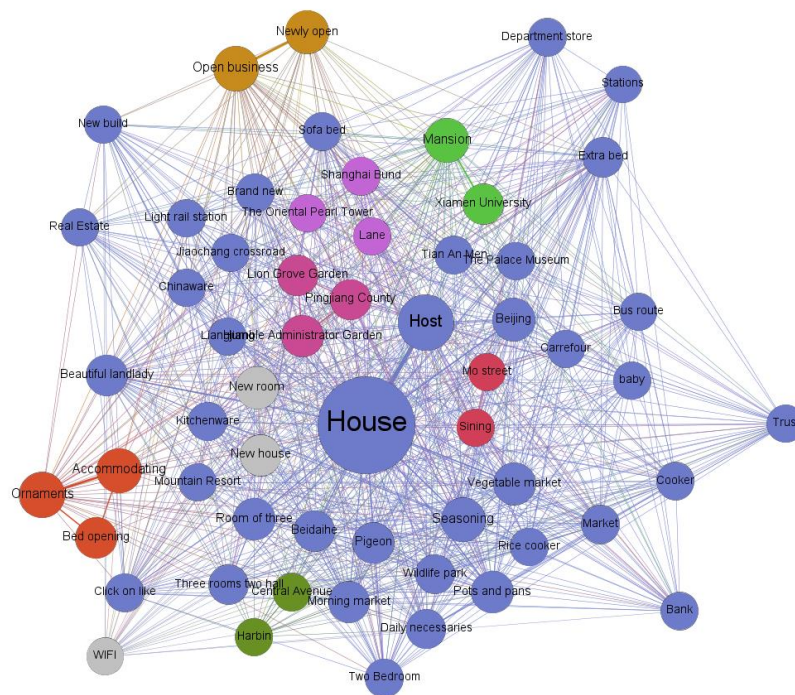

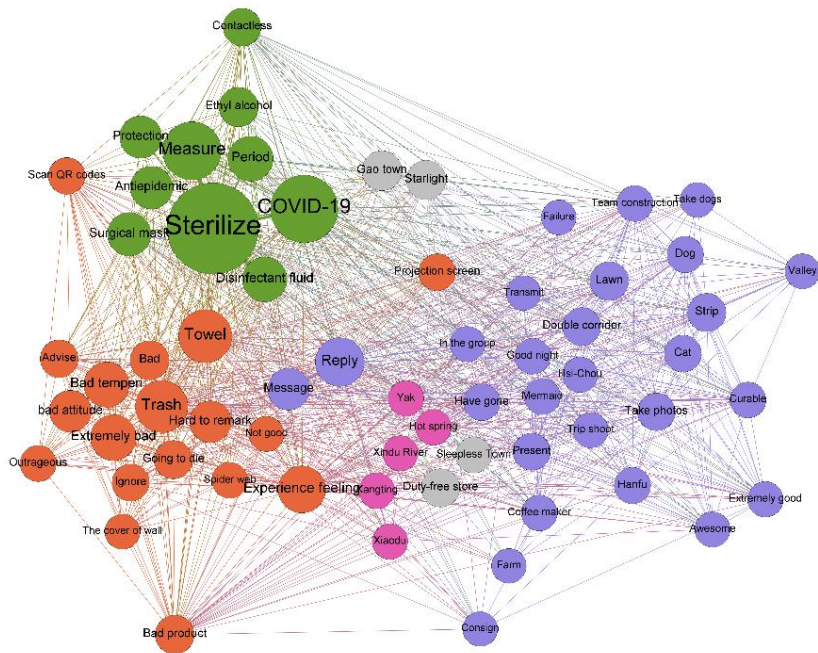Fig. 4 Visualization of tourist perception network before COVID-19.

Fig. 5 Visualization of tourist perception network after COVID-19.

4.2.3 General changes in tourist perceptions before and after COVID-19

First, there was a sudden increase in perceived risks and environmental perceptions of peer-to-peer accommodation. Tourists were particularly concerned about environmental health conditions related to pandemic prevention and control, likely to risk trusting peer-to-peer accommodation products. At the same time, preferences for natural landscapes increased in terms of environmental perception.

Second, after the pandemic, experiences of peer-to-peer accommodation were enhanced, while perceptions of functional facilities weakened. Compared with pre-pandemic, tourists had greater requirements for the sense of the experience of the accommodation and destination. They preferred leisure and entertainment activities, whether the accommodation's internal facilities or the surrounding experience activities they participated in during their stays.

Third, post-COVID-19 interactions between hosts and guests in peer-to-peer accommodation decreased, which was quite different from pre-COVID-19. Before the

pandemic, tourist perceptions of host reception attitudes, personalities, and relationships between hosts and guests were less prominent after the pandemic. Instead, they paid more attention to the risk of infection caused by interaction.

Fourth, the destinations where tourists chose peer-to-peer accommodation products changed after the pandemic, with tourist preference gradually shifting from popular urban scenic spots before the pandemic to provinces and cities with prominent natural environments in southern China.

4.3 Changes in the perceived value of peer-to-peer accommodation

According to the literature review, perceptions can reflect consumer values when choosing products. The above thematic classification of perceptions can be divided into different perceived values. Consumer perceived values of hotels generally encompass functional and emotional elements. Functional value reflects salient functional, utilitarian, or physical attributes. Functional values reflect the core benefits and essential utilities derived from products and services. For hotels, functional values include tangible products and intangible services (Yang and Mattila, 2016). The perceived functional values in this research included room features, facility perceptions, service perceptions, environmental perceptions, and surrounding convenience. Emotional values are specific feelings and affective states of perception, and they were embodied in perceived evaluations in this research.

Compared with traditional hotels, peer-to-peer accommodations emphasize host-guest interactions and guest experience (Gerwe, 2021). This investigation treated perceived social values as the unique experiences that peer-to-peer accommodations can deliver to guests. Social value is the perceived utility obtained by associating with specific groups and is reflected in host-guest interactions in this research. Also, this analysis puts forward a new perceived value dimension, namely, the perceived experience value. Customer perceived experience values are unforgettable memories created by multi-sensory participation in using a product or service. The perceived experience value in this research absorbs part of the epistemic value proposed by Sheth, such as arousing curiosity and providing novelty. Also, the perceived experience value emphasizes the guest's sense of participation rather than just

only the acquisition of knowledge. Therefore, the perceived experience value in this research reflects experience activities and choice of destination.

In addition, perceived conditional value is entered into the framework (Figure 6), rarely mentioned in previous studies. This refers to the conditional effects of a specific situation on value perceptions rather than universal measures of value (Sweeney and Soutar, 2001). Sheth et al. (1991). described conditional value as arising when situational factors occur, such as illness or some specific social situation. As a specific situational factor, the pandemic played an important role in people's perception; thus, the perceived risks associated with COVID-19 were included in the perceived conditional value.
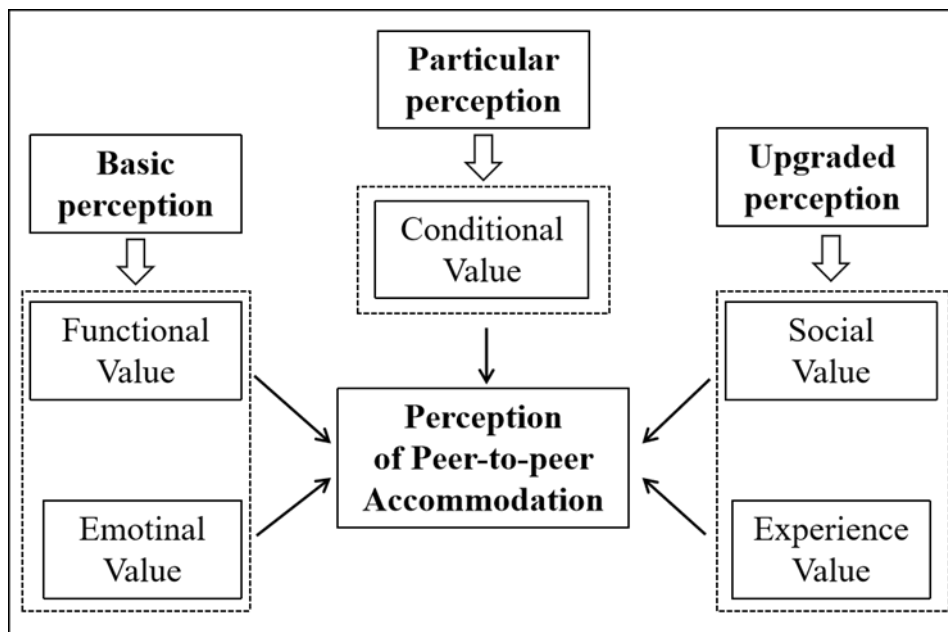

Fig. 6 Peer-to-peer accommodation perceived value framework.

4.3.1   Changes in perceived functional value

Overall, the emphasis on functionality in peer-to-peer accommodation changed, especially regarding the room state/features and surrounding convenience. Perceptions of facilities and services significantly changed. Post-pandemic, people tended to choose facilities with a strong sense of experience rather than those focusing on everyday functions. Guests also had more requirements for the surrounding environment, especially the natural environment. They were more enthusiastic about theme rooms and required a quiet environment (earplugs became necessary). For example, one mentioned that "the room is

very distinctive, it is tie-dyed theme style, all those handicrafts are handmade by hosts ."Some people stayed in a tea-themed accommodation or booked a themed room because "my son likes robots ."Therefore, after the pandemic, staying in peer-to-peer accommodations with distinct themes enhanced visitors' experiences and left them with unforgettable memories.

Furthermore, guests wanted more facilities for entertainment, such as game consoles, screen projectors, computer equipment, and coffee machines. For example, one tourist mentioned, "... have games consoles, billiards, and karaoke for both adults and children, and the first time I saw a mahjong machine in a northern peer-to-peer accommodation. Pretty good anyway." Another one said, "(the house) has a good computer and it is very easy to play games. Keyboard and mouse are comfortable to use". Therefore, it can be seen that entertainment facilities inside peer-to-peer accommodations influenced evaluations of products.

Additionally, people were more aware of technology, such as using "*xiaodu*" (disinfection) voice assistants in rooms. Comments like "the room were full of technology, and the intelligent voice control was pretty cool," "modern room facilities, intelligent curtains, and toilet made me fully enjoy the convenience brought by technology," "free parking, intelligent room, all of these can be controlled by a mobile phone, and I had a sense of science and technology," highlighted experiences of technology in the properties. On the contrary, descriptions of the amenities in the kitchen, bedroom, and other areas were less frequent.

4.3.2   *Changes in perceived emotional value*

Staying in peer-to-peer accommodations aroused guests' feelings and emotions, reflecting the experiences' perceived emotional value. Peer-to-peer accommodation stays generated different emotions before and after the pandemic. Post-pandemic, the emotional experiences were more colorful than before. Words such as "mood," "heal," and "relaxation" were mentioned more frequently. People wanted to change their moods and emotions through accommodation stays, hoping to remove the stress and fatigue brought by the pandemic. For

example, one person said, "The epidemic made everyone feel nervous and depressed, but when you set foot on this quiet island, you immediately feel completely relaxed and forget your troubles. To enjoy the sunrise and sunset, I purposely booked a room with a sea view and a large terrace". Another mentioned that "we saw the beautiful sunset in the afternoon, which removed the disappointment of having to cancel our trip outside the province ."The outbreak and continuance of COVID affected people's emotions, and people chose unique peer-to-peer accommodations for more memorable experiences to gain release and greater relaxation. For example, one said, "There are many unfortunate situations and people in this world, but there are still many gentler things to encourage us to live happily ."The choice of peer-to-peer accommodations created emotional value for guests. One of the feelings about peer-to-peer accommodation was bringing a sense of home to guests; "the house is pretty good, moreover, it gave me a sense of home and removed my bad mood. "

Peer-to-peer accommodation not only uplifted guests' spirits but also helped to rekindle neglected emotions before the pandemic. After COVID-19, people attached more importance to families and friends and staying at peer-to-peer accommodation strengthened these bonds. As one guest noted, "we need love and companionship more than ever during this extraordinary time of panic, isolation, and alienation. We enjoyed the closer relationships with our companions and our hearts were mended. Here things are less deliberate, more relaxed and casual, and we are with our most cherished people, we can relive old times together." Another said she wanted to find a place for romance with her husband after staying at home for a long time.

4.3.3   Changes in perceived social value

In the post-pandemic era, the risk of infection undermined the perceived social value of peer-to-peer accommodation offerings. After the outbreak of COVID-19, the interaction between hosts and guests decreased. As opposed to face-to-face contact with the host, "contactless" services were more popular with travelers (while the policy did not prohibit host-guest interaction), giving a greater sense of security. This differed from before the pandemic when peer-to-peer accommodation was primarily associated with host-guest

interactions. In the text before the outbreak, one visitor said, "...the host is very enthusiastic. He is a famous ceramic artist in China. He enthusiastically taught us about ceramics and painting, and communicated with us. We had a great experience". Some visitors also mentioned that "the host himself cooks breakfast and dinner, and the home-cooked dishes are very delicious, and ingredients are grown by him," and "the host and his wife are very warm and kind. Our stay experience was very good". Guest comments before the epidemic showed that host-guest interaction was crucial in improving guests' sense of experience.

However, post-pandemic perceived health and safety risks drove people to maintain a physical distance from others rather than enjoying social experiences. "Contactless service is the best choice now", "It is convenient for hosts to tell guests the room code in advance to avoid contact during the epidemic," said some reviewers. Non-contact check-in, check-out, catering, and other services made tourists feel safe and comfortable. People usually contacted the host via WeChat (one of China's largest online chat apps), and details of check-in information and precautions were sent to them to avoid information asymmetry. One visitor commented that "the host's instructions were clear and guided us on how to use the equipment. With clear instructions, you can do all of these things yourself". A review mentioned that "I feel more comfortable in non-contact accommodation" in that "non-contact service does not affect my living experience" and "non-contact service during the pandemic is more humanized ."Therefore, in the context of the pandemic, the reduction of interaction experiences had little impact on guests' perceived satisfaction. This is worth considering in how to find unique new advantages for peer-to-peer accommodations post-pandemic.

4.3.4   Changes in perceived experience value

People can deepen their understanding of the destinations and local culture through experiences, and they create unforgettable memories of the destination in the process. Post-pandemic, this phenomenon was more apparent, as tourist preferences for types of experiences changed. Perceptions of peripheral experiences were different before and after COVID-19. Before, people were keen to participate in indoor, highly-attended experiences. For example, one person said, "we are fans of concerts. (The room is) close to the Olympic

sports center and very convenient to go back and forth. Watching a concert and then returning to the apartment made us feel like being at home and was very comfortable". Post-COVID, people were more inclined to travel with friends or family for outdoor experiences and avoided crowded indoor facilities. Photo-shooting tours, duty-free shopping, hot springs, and group development were activities that customers preferred. By participating in outdoor experiences, people could deepen their knowledge of local history and culture through interactions and participation. For example, one mentioned that "on the way to the temple, the host talked with us a lot about the knowledge of Buddhism and the understanding of life ."They heard more about the history of scenic areas when traveling outdoors; for example, "through this trip to Beidaihe, we have a comprehensive and in-depth understanding of this place" and "the scenery everywhere allowed us to take beautiful photos, capturing the wonderful moments of this short trip."

Active participation in experiences helped people better understand and identify with local culture, gaining intellectual satisfaction. Preferences for Hanfu (traditional Chinese clothing) increased after the pandemic, not only influenced by the trend toward traditional culture revival but also related to the aesthetic and consumption values of Generation Z. Hanfu is a type of traditional clothing, through the experience of putting on *Hanfu*, people deepened their identification with local and Chinese culture. A new "accommodation + clothing culture" trend emerged; expressed for example in "the ancient laneway is very beautiful, so I suggest wearing *Hanfu* to take photos" and "we came here because of the free *Hanfu* provided by them, which can be worn outside. But we couldn't stand the heat, so we just posed in our room".

In addition, compared to pre-pandemic, the destinations people chose changed, with preferences gradually shifting from popular urban scenic areas to cities with pristine natural environments in southwest China. Tourists chose destinations offering a greater variety of experiences. For example, the "Kashgar Area" in Xinjiang, "Xizhou Ancient Town" in Dali, Yunnan Province, and "Dishui Danping Scenic Area" in Beihai were at the top of people's lists. It can be seen from the post-pandemic comments that the natural environment surrounding peer-to-peer accommodation was a major attraction for tourists, making them

feel relaxed and enjoyable. At the same time, it triggered future travel intentions. Some visitors mentioned that "the fresh air and the peace of nature... I will choose this house next time". In contrast, tourists visited fewer popular scenic spots such as Beijing, Guangdong, and Chongqing.

In addition, after the pandemic, tourists carried out more leisure activities and paid greater attention to local experiences, such as local natural scenery, the characteristics of ancient towns, and the courtyard environments of houses. The comments showed that people were more willing to experience travel activities at a slower pace than being in bustling metropolises. Tourists were willing to go to remote destinations. One comment was, "...the place is remote but quiet". Therefore, destinations in remote locations but outstanding natural landscapes should be equipped with tourism facilities according to the actual situation, to meet the different needs of tourists.

To further explore the trend of the spatial distribution of choices of peer-to-peer accommodation products in China after the pandemic, the spatial geographic distribution characteristics of reviews in China were determined by ArcGIS10.2. It can be seen that the urban peer-to-peer accommodation market in southern China displayed a growth trend, represented by Sichuan, Guizhou, Tibet, Jiangxi, and other regions. However, the results showed that the consumption of peer-to-peer accommodation products in Guangxi decreased compared with before the pandemic. The reason may be that this province is famous in China for health tourism, and its market customers are mostly the elderly. Older adults could not travel during the pandemic due to inconvenience and high risk. The analysis of comment frequency found that the word "old" appears more frequently in the comments on peer-to-peer accommodation in Guangxi. For example, some tourists mentioned that "many old people from other places spend winter here" and "parents will come to Beihai for winter every year in the future, and we will book this place in the future ."In Guangxi, the word "old" was mentioned less frequently in comments after the pandemic than before. After the pandemic, the market for peer-to-peer accommodation in most provinces in northern China declined to varying degrees, especially in northeast China, where the pandemic was the most serious. In addition, the market for peer-to-peer accommodation in some regions in the

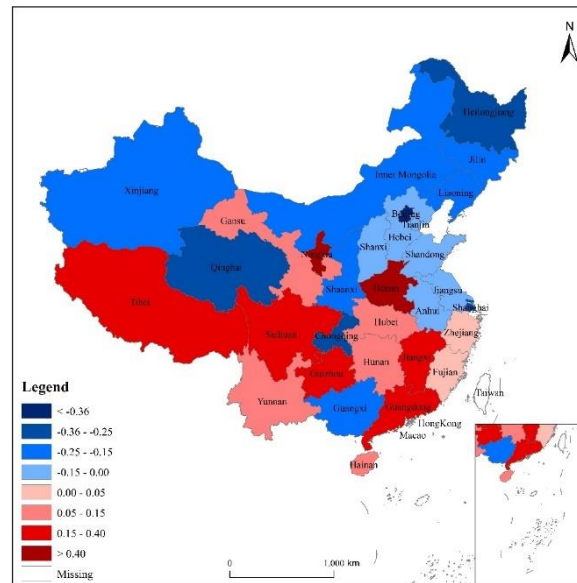Yangtze River Delta region also shrank, including for some cities in Jiangsu and Anhui.

Fig.7 Spatial distribution of comments before the pandemic.

4.3.5   *Changes in the perceived conditional value*

In this research, the perceived conditional value was reflected in perceived risks. Perceived risk also became an essential condition for people to choose products. Based on the above analysis of guest perceptions, it can be seen that post-pandemic tourists had evident risk perceptions regarding peer-to-peer accommodation. The analysis revealed these types of risks to be facility risks, environmental health risks, service risks, physical risks, security risks, and financial risks. The differences in perceived risk before and after the pandemic are reflected in the emphasis on different contents. In terms of environmental health risks, people were paying more attention to public health than surrounding public security afterward. Perceptions of service attitudes were much more substantial for service functions than service convenience.

Based on Figure 8, perceived risks were mainly concentrated in environmental health, service, and physical risks. Environmental sanitation pandemic prevention and disease control measures seriously affected perceived safety. The service attitudes of staff and the perceived service experience of customers were the most critical elements of service. Guests were most concerned about the low-quality service, such as slowness, bad attitudes, and privacy disclosure. Service attitudes also had a considerable impact on the mood of tourists.

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In addition, facility, security, and financial risks were involved. In the post-pandemic era, customers were concerned about the cost-effectiveness of peer-to-peer accommodation. The behavior of saving money before the pandemic was reduced to the expectation that products were consistent with the real thing after the pandemic. Some customers believed that operators were cheating by changing bookings. Perceived risk had a significant impact on trust in shared accommodation products.
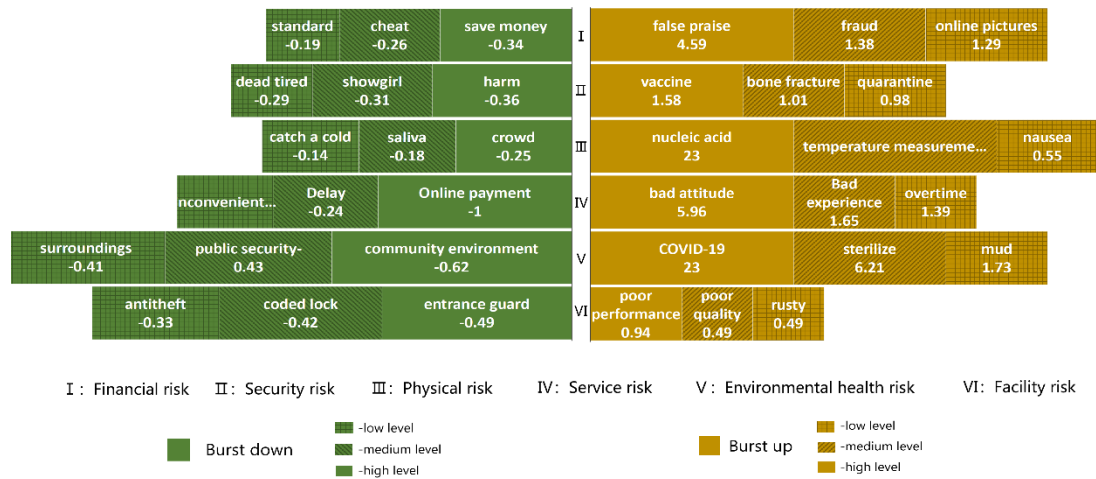

Fig. 8 Tourist perceived risks of peer-to-peer accommodation.

5   Conclusions, discussion, implications, and limitations

5.1 Conclusions

This research explored the differences in guest perceptions of peer-to-peer accommodation products before and after COVID-19 through text content analysis and semantic network analysis and determined the causes of the differences on a preliminary basis. The findings were that COVID-19 had a considerable impact on the development of China's peer-to-peer accommodations, and people's travel was affected by concern with the pandemic. Also, COVID-19 significantly impacted experiences with and perceptions of peer-to-peer accommodation, and the focus of attention changed significantly before and after the pandemic, reflecting shifts in perceived value among guests.

First, the emphasis on functionality in peer-to-peer accommodation changed, and the functional value remained a critical factor for tourists in choosing accommodation products.

Before the pandemic, people were more concerned about the availability of facilities, but after it, they paid more attention to the experiences and entertainment provided by the facilities.

Second, the perceived emotional values brought by accommodation stays were more complex. Peer-to-peer accommodation created new emotional experiences for guests, such as arousing former emotions, easing depression, and lifting guests' spirits.

Third, the perceived social value of the products decreased as host-guest interactions were less frequent. Influenced by social and physical distancing, "contactless" services became more popular. Online communication between hosts and guests was greater, but guests still had great experiences and enjoyed good service. Pre-COVID, one of the reasons for choosing peer-to-peer accommodation was the social experience brought by host-guest interactions.

Fourth, post-pandemic, preferences for types of experiences changed. Perceptions of peripheral experiences were different before and after COVID-19. Before the pandemic, people tended to attend indoor gatherings for entertainment; after COVID-19, they were keener to understand local customs and cultures through participating in less crowded outdoor experiences. In the process, the sense of engagement through interactions and participation in experiences was essential. People changed destination choices, shifting from popular urban scenic areas (pre-COVID) to provinces and cities with abundant natural environments in southwest China (including Yunnan, Guizhou, and Sichuan).

Fifth, perceived conditional value was reflected in perceived risks. Post-pandemic tourists had apparent risk perceptions regarding peer-to-peer accommodation. The differences in perceived risk before and after the pandemic reflected the emphasis on different contents. For example, perceived risks increased, reflected in heightened senses of environmental health, service, and physical risks, whereas people were more focused on service risks before.

5.2 Theoretical implications

The results provide theoretical and methodological enlightenment for the peer-to-peer accommodation literature. First, peer-to-peer accommodation has been widely analyzed and

discussed. The impact of COVID-19 on tourism and peer-to-peer accommodation has been significant, leading to changes in guest needs, perceptions, and decisions. However, the current research on COVID-19 is more about the perceptions of traditional accommodations, and little attention has been paid to feelings about peer-to-peer accommodation. Some scholars have explored the responses of peer-to-peer accommodation owners to COVID-19 and changes in their perceptions, but few have explored this issue from the perspectives of tourists pre- and post-COVID-19. Therefore, this research analyzed the impact of COVID-19 on peer-to-peer accommodation based on guest perceptions, making up for the shortcomings in previous studies.

This research was based on the theory of consumer perceived value, taking the outbreak time as the node to explore the differences in perceptions before and after COVID-19, expanding the theory's application scope. In addition, there are quite a few previous studies in peer-to-peer accommodation on value, which is often co-created by hosts and consumers, but the perceived value theory applied to peer-to-peer accommodations still has great research significance, so these findings enrich the previous research. This paper constructed a multidimensional framework of tourist perceived value based on the peer-to-peer accommodation context and epidemic background. Meanwhile, the changes in tourist perceived value before and after COVID-19 were compared to update the researchers' cognition of tourist perception. For example, it was determined that the sense of the experience of products was more important for tourists, and host-guest interaction decreased, which contradicts previous studies. This shows that some previous conclusions do not apply to the COVID-19 situation. The perceived experience value refers to unforgettable memories created through guests' multi-sensory participation using peer-to-peer accommodations. The changes in perceived risks of peer-to-peer accommodation are also discussed. Some previous conclusions on perceived risks were supported; for example, tourists have perceived safety risks. Also, these findings extend the theory of tourist perceived risk. Post-COVID-19, perceived risks about peer-to-peer accommodation mainly focused on environmental hygiene, service functions, and physical feelings, while they paid little attention to facility risks, which was different from previous research. In addition, this research found that most of the

previous studies on peer-to-peer accommodation were based in Western countries, and few had a focus on China or collected nationwide data. Therefore, the research findings not only verify some previous research conclusions in a new context but also supplement existing research conclusions.

5.3 Practical implications

First, consumer perceptions of risk have increased because of COVID-19, especially facilities related to toilets and bedding. Thus peer-to-peer accommodations must work to reduce perceived uncertainties among guests, and platforms should standardize and consolidate hygiene standards and announce sanitization measures to relax consumers. For example, platforms arranged for employees to learn COVID-19 prevention and control policies and incorporated them into employee performance evaluation. Enhancing non-contact service equipment was essential, such as self-check-in devices and automatic temperature detectors, to prevent virus transmission. Room cleaning staff should disinfect the room several times according to the area of the room to ensure the safety of the guests.

Second, consumer requirements for experiences have changed, so peer-to-peer accommodation hosts need to transform room amenities and activities. For example, indoor spaces should provide guests with more recreation options, such as game consoles, family KTV corners, 24-hour fitness rooms. In addition, the narrative style of signage in critical locations such as reception desks, bathrooms, exits, and entrances should be changed to inform guests in kinder, gentler, and more interesting ways. More attention should be paid to including technological elements, such as 24-hour AI service assistants (online WeChat mini-programs and offline robots) to cater to guest demands as quickly as possible.

Third, given the increased interest in natural landscapes and the history and heritage of destinations, peer-to-peer accommodation hosts should arrange activities to help guests more deeply explore local landscapes, culture, and historical heritage. For example, activities such as mini-lectures on local history can be conducted while visitors are dining. Brochures on local culture and tourist attractions should be placed at reception desks, elevators, corridors, rooms, and other prominent places, along with directions, recommendations of unique

products, special foods, and other salient information.

5.4 Limitations and future research directions

There are some limitations to this research. First, this investigation took China as the case study, and some findings may only apply to Chinese tourists. Therefore, other countries should be selected for future research to determine if there are differences among tourists from various parts of the world. Second, the data set came from the Ctrip platform. In the future, data from other websites should be analyzed to verify the conclusions of this research. Third, due to space constraints, this research did not analyze the changes in feelings among sub-groupings of guests about peer-to-peer accommodation before and after COVID-19. Future research should further analyze the emotional changes of different types of guests and influential factors. Finally, this research did not reveal much psychological perceived risk regarding peer-to-peer accommodation, which may be due to the limitations of big data analysis. In the future, in-depth interviews and other methods should be used to study changes in psychological perceptions of risk in the context of COVID-19.

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