

The Impact of COVID-19 on Chinese Hotel Industry and Airbnb

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Abstract: The novel coronavirus pneumonia (COVID-19) outbreak in January 2020 has affected different industries in China. This paper focuses on the impact of COVID-19 on the accommodation industry in China. In this study, a regression model was used to analyze the correlation between weekly occupancy rates of hotel and Airbnb respectively and the number of infected people from January to April to test the hypothesis: (1) COVID-19 negatively impacts the hotel industry in China; (2) COVID-19 negatively impacts the P2P short-term rental apartment industry (Airbnb) in China. We found that hotel occupancy was negatively correlated with the number of existing infections. The occupancy rate of short-term rental apartment in Airbnb is negatively correlated with the number of existing infections. The results show that COVID-19 has had a negative impact on the hotel industry and Airbnb in China. Through comparative data calculation, we found that the impact of the epidemic on hotels is greater than that of the Airbnb. Current research on the impact of COVID-19 on the accommodation industry is inadequate. This study verifies that COVID-19 has a greater negative impact on hotels than Airbnb, and can provide suggestions for government and forecast, which could be references for enterprises' future investment portfolio and risk aversion.

1 INTRODUCTION

At the end of 2019, a new epidemic of COVID-19 broke out in Wuhan, China, and quickly spread across the country and the world. After the unknown pneumonia virus was identified as COVID-19, China reported its first COVID-19 patient's group in Wuhan on 11 January. On January 20, the epidemic spread across the country (Office of Health Emergency Response 2020). The World Health Organization has declared on 30 January 2020 that the global outbreak of COVID-19 is a public health emergency of international concern (World Health Organization 2020). It is a virus that can

spread rapidly from person to person. In the wake of the outbreak in China, the government moved quickly to call on people to reduce unnecessary travel. Studies have shown that China's stringent control measures have significantly slowed the spread of COVID-19 (Kraemer et. al. 2020). At the same time, it also had a major impact on the production and daily life. In order to avoid infection, the Chinese reduced face-to-face communication and gathered together, which would have a great influence on offline industries, such as offline education, entertainment, and tourism. This article focuses on the impact of COVID-19 on the accommodation industry.

Before the epidemic, as an important part of China's service industry market (Yang and Cai 2016), the hotel industry is a fast-growing and highly profitable industry, which can, directly and indirectly, influence the formation of conditions for sustainable social and economic growth (Jones et. al. 2014). China's tourism and hospitality industries have performed well in the past decades (Tsang et. al. 2015). Data from Passport (2020) shows that lodging sees 6 percent current value growth in 2019 to reach CNY 656.4 billion, of which hotel shares CNY 515.6 billion with 92.7 million rooms. Besides, the rise of the sharing economy boosts short-term rentals. Its sales value increase by 40.1 percent from CNY 25.2 billion in 2018 to CNY 35.3 billion in 2019.

However, the outbreak of COVID-19 in early 2020 has had a huge impact on China's accommodation industry. On the one hand, in order to control the epidemic, people voluntarily reduce their travel. At the same time, local governments issued policies to limit the flow of people (Lin et.al. 2020). The outbreak coincided with the Chinese New Year holiday, which was a traditional peak season for tourism. However, most of the attractions are closed because of the outbreak (Ministry of culture and tourism of the people's republic of China 2020). On the other hand, the authority has imposed mandatory quarantine measures on people who are suspected of being infected, moving across provinces, or returning from overseas countries (People's Government of Guangzhou 2020; Culture Broadcasting and Tourism Bureau of Nanning 2020), bringing customers to the accommodation industry. This study aims at verifying the impact of the epidemic on hotels and homestays through regression analysis by using weekly occupancy rates data, and offering suggestions for the recovery after the epidemic, so as to provide a reference for the development of hospitality in the future.

The rest of the paper is organized as follows. Section 2 is a brief review of the development of the Chinese accommodation industry and crisis impacts on Chinese tourism and accommodation industries. Hypotheses about the relationship between the epidemic and the accommodation industry will be put forward as well. Section 3 offers the explanation of the methods data analysis used with a brief description of the sample, followed by results in section 4. Some analysis of the results and suggestions are presented in section 5. In the end, section 6 draws conclusions together with study limitations.

2 LITERATURE REVIEW

2.1 Development of Chinese accommodation industry

In China, the accommodation industry is an essential component of the expanding tourism and its impacts on the national economy is a sector of increasing significance. As the largest emerging country, China has the worldwide biggest population, rapidly growing economy, increasing disposable income, and low labor costs, which has allowed it to become one of the most favorable tourism markets (Sofield and Li 2011; Yang 2012). For many cities and areas, tourism and hospitality are the key industries that can drive local economic growth from the aspects of creating

job opportunities, stimulating internal demand, and decreasing regional inequality (Jackson 2006). In 2016, there are 588,000 operating enterprises in the accommodation industry, rising 2.5% from the last year, and the operating income is 379.1 billion CNY, which generates a growth rate of 4% compared with last year (Ministry of Commerce of the People's Republic of China 2017). This had shown a sustainable upward trend in the development of the Chinese accommodation industry. Moreover, according to the National Bureau of Statistics of China (2020), the hospitality industry, including accommodation has taken up about 3.4% of the gross domestic product (GDP) in the tertiary industry. It means that this industry still has great potential for further development. However, the COVID-19 outbreak has paused the growth. How to help and guide this industry to remain sustainable and healthy growth after the global pandemics is important for the domestic economic evolution.

The Chinese accommodation industry has been selected as the main research subject in many academic papers, especially the most common and prevalent hotel industry. Qin et al. (2019) illustrated the transformation of logics since 1949 and the current situation in the Chinese hotel industry and also discussed the possible future development and trends in the accommodation market, such as Airbnb and Tujia. Since the accommodation industry in China has involved with the rising international capitals, many scholars have researched the hotel business environment from the perspectives of foreign investment and the entry of multinational hotel chains. Mao and Yang (2016) investigated the relationships between different moderating elements and the impacts of the hotel-related foreign direct investment spillovers in China. Besides, the Chinese hotel industry has different segmentations and they target specific markets from low-end to high end. Yang et al. (2017) examined the regional efficiencies in Mainland China to help hotel managers accomplish better decision-making with a quantitative method to assess hotel performance. It can be seen that the researches that focus on the traditional form of accommodation, the hotel industry, have studied this field from diverse perspectives. As a result, the comprehensive theoretical basis might help it cope with the challenges of COVID-19 more easily.

In recent years, there are several innovative accommodation choices and the short-term rental apartments become increasingly popular. With the rapid development of information and communication technologies, potential travelers can use the social travel platforms that offer trip commitments and customized recommendations, which has shown a changing trend of consumer patterns and behaviors (Leung et al. 2013). As a result, the people who plan to take a trip have started to use and adapt to social travel platforms. As a leading online platform of sharing homestay, Airbnb has become popular for travelers to find available accommodations from the online hosts (Zervas et al. 2017). In 2015, the amount of Airbnb users had increased by 400% for domestic and overseas trips in Asia, including 10% of business visitors (Qin et al. 2020). As for China, more than 2 million Chinese users have registered on the Airbnb platform and China has become one of the major countries of consumer sources (Lyu et al. 2019). Although Airbnb has faced strong competitors in China, this platform has the unique advantage of serving both domestic and overseas consumers, which makes this platform more representative from the perspective of globalization.

According to the Ministry of Commerce of China (2017), it reported that there are 53,852 available short-term rental apartments at the end of 2016 and the growth rate in the past two years has reached almost 78%. Since this new choice of accommodation is still considered to be an emerging market in China, most scholars only emphasize the impacts of Airbnb on the traditional hotel industry and the attributes of this emerging accommodation market. Qin et al. (2020) investigated the entry and expansion of Airbnb in China and also identified the positive and negative influences of Airbnb on the Chinese hotel industry. Lyu et al. (2019) studied the consumer's

experience in China with the peer-to-peer short-term rental apartments by the Airbnb platform and seven important dimensions of customer experience were found and analyzed. Apart from the traditional hotel industry in China, it is evident that the rapid growth of this P2P accommodation platform has attracted much attention and gained high popularity. However, compared with the hotel industry, the studies of this emerging industry that mostly concentrate on the preliminary stage might be less comprehensive and mature.

2.2 Crisis impacts on Chinese tourism and accommodation industries

The tourism and accommodation industries are easy to be affected by unexpected external factors, particularly with the changing international tourism demand. For example, natural disasters, unstable social and political environment, economic depressions, and outbreaks of infectious diseases can be regarded as the typical examples of negative issues for travel demands (Avraham and Ketter 2013). Reisinger and Mavondo (2005) illustrated that risk and uncertainty perception of trip destination, including the objective physical and healthy risk, could directly alter travelers' willingness to purchase tourism products. It means that global disease outbreaks are likely to have adverse influences on the Chinese accommodation industry from the perspective of decreased international tourism demands.

Since the accommodation industry is regarded as a high-exposure industry and involves highly frequent interpersonal interactions, with the worldwide epidemic of Severe Acute Respiratory Syndrome (SARS) in 2003, the worldwide accommodation industry had been bruised seriously. Most of the accommodation consumers are inbound and outbound visitors who are likely to spread the virus widely. In 2003, the international spread case in the Hong Kong Metropole Hotel, which infected the overseas travelers from multiple countries, had indicated the seriousness of close contacts and environmental infections (Chien and Law 2003). Dombey (2004) illustrated the influences of SARS on the Chinese tourism market and argued that the situation for the hotels was worse than the airline. In 2004 the April occupancy rate of Beijing hotels decreased 23% compared with the same month in 2002 and the occupancy rates of the high-end hotels fell by 90% (Dombey 2004). Other scholars also investigated the impacts of the SARS epidemic in other Asian countries, such as Korea. The study of Kim et al. (2005) found that the SARS outbreak had affected the Korean hotel industry negatively in different departments. Regarding the crisis management in the response to global epidemics, Leung and Lam (2004) studied the risk management to alleviate the negative outcomes of the SARS outbreak by investigating the case of the Hong Kong Metropole Hotel. Due to the same high infectivity of the SARS and COVID-19, these previous researches could be used as references to estimate the impacts on the Chinese accommodation industry and offer further suggestions for the market.

With the current outbreak of COVID-19, the international tourism and hospitality industries have been affected dramatically. Chang et al. (2020) claimed that these industries are extremely risk-sensitive to this kind of great devastation and also indicated the importance of sustainable tourism after the COVID-19. Gössling et al. (2020) offered a quick evaluation of the outcomes of the lack of medical resources and argued that the international accommodation industry has been damaged heavily as a result of cross-border travel restrictions. Besides, the application of long-term international quarantine during the COVID-19 threat can also serve as an important factor of negatively affecting the tourism industry. Mykhailo Rutynskyi and Halyna Kushniruk (2020) estimated the potential economic losses of this industry in the city Lviv under the condition of long-term lockdown and quarantine. As for China, Hong et al. (2020) examined the influence of COVID-19 on the bed and breakfast (B&B) tourism market through an importance-performance

analysis, based on the tourist satisfaction in Zhejiang, China. The research on examining the possible impact of COVID-19 on both the hotel and the homestay accommodation industries in China is lacked.

According to the previous reviews, the importance of the traditional hotel and the innovative short-term P2P accommodation industries have been indicated. Besides, Airbnb is the leading P2P short-term accommodation platform worldwide, which can cover the inbound and outbound visitors in China. As a result, this article will select these two representative segmentation markets (hotels and Airbnb) as the focal research subjects to examine the impacts of the COVID-19 outbreak in China on the Chinese accommodation industry. Moreover, the earlier studies of the consequences of the SARS issues affecting the global accommodation industry had neglected the researches on the P2P short-term rental lodging, due to the fact that this industry just starts to be prevalent in recent years. Based on these facts and arguments, the hypotheses can be proposed as follows:

Hypothesis 1: COVID-19 negatively impacts the hotel industry in China

Hypothesis 2: COVID-19 negatively impacts the P2P short-term rental apartment industry (Airbnb) in China

3 DATA ANALYSIS

3.1 Data source

With the aim of analyzing the influence of COVID-19 on Chinese Hotel and Airbnb industry, the cross-section data were obtained from three different sources. First of all, the data about COVID-19 has been collected from the National Health Commission of the People's Republic of China, which is an official Chinese government website and providing a daily briefing on novel coronavirus case in China. Second, we obtained the hotel operating performance data from Smith Travel Research (STR) Hotel Census Data, a leading provider of data analytics for global hospitality sectors with it having the complete profile of hotels (Baqir 2011). Finally, we used the Airbnb data from AllTheRooms Analytics, the world's largest accommodations search engine with vacation rentals (PR Newswire 2019).

Among the three databases used in the research model, the dependent variable is from National Health Commission of the People's Republic of China, and the independent variables are provided by STR Hotel Census Data and AllTheRooms Analytics. From the intuitive understanding of consistency, larger sample size will make our estimator arbitrarily to reality. With using the three different databases, it ensures that our data is based on the most accurate and extensive sample in different areas.

3.2 Dependent variables

During the Coronavirus Disease emerged in 2019 (COVID-19), there are a number of indicators that show how the outbreak is progressing in China. Including confirmed patients each day, cumulative confirmed patients, suspected patients and deaths (Yue et al. 2020). However, the number of deaths in the initial phase of the epidemic is strongly influenced by medical measures and the infectors' age, and the increase of deaths number will also bias the cumulative number of confirmed cases. To build the most accurate model, we choose the number of COVID-19 confirmed patient that counted each week to measure the development of the epidemic. The number of confirmed patients from 6 January to 19 April 2020 is as shown in Figure 1 (National Health Commission of the People's Republic of China 2020). Thus, we have the dependent variable as:

X =The number of confirmed patients

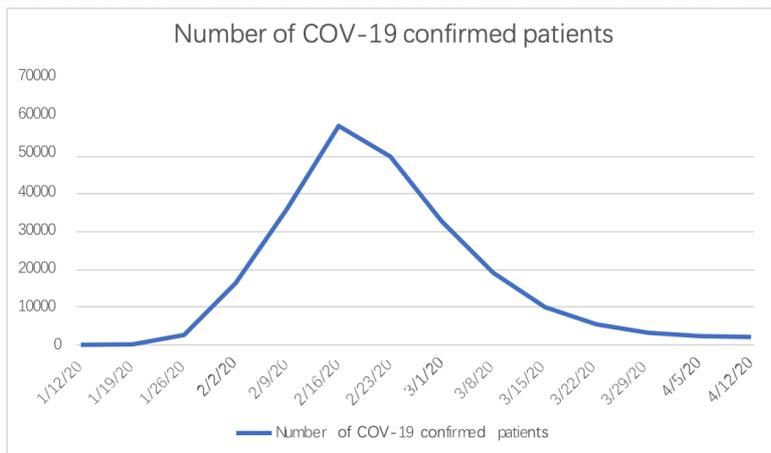


Figure 1. The number of confirmed patients from 6 January to 19 April 2020.

Independent variables

From the research of Madanoglu and Ozdemir, the external environment has a strong impact on the accommodation industry’s long-term performance. Under the influence of the uncertainty of the external environment, consumers may have a tendency to delay consumption in order to hedge future economic risks. Thus, during the COVID-19, consumers may decide whether to cancel or delay their travel and accommodation plans due to the severity of the epidemic. In order to measure the damage to the hospitality and Airbnb industries, we collected and compared many data to measure the loss, such as revenue, rate of price decline, average occupancy rate and etc. But for two different industries, Airbnb's size, though overgrowing in recent years, is still far smaller than that of the hotel industry (Mody and Gomez 2018). Besides, different levels of accommodation have different target customer groups in the accommodation industry. For example, in the hotel industry, there are high-end hotels, mid-level hotels and low-level hotels. Meanwhile, the customer groups of Airbnb are different from those of hotels, for Airbnb’s customers are more willing to experience the local life. The study found that in the face of external uncertainties, the negative impact on owner-operated hotels and luxury hotels is less severe (Madanoglu and Ozdemir 2018). So, it not reasonable to compare these two industries with the rate of decline in prices and the revenue. Therefore, we chose the occupancy rate from 6 January to 19 April 2020 as the dependent variable to measure the impact of the COVID-19 on the hotel and Airbnb industries:

$$Y1 = \text{occupancy rate of Hotel}$$

$$Y2 = \text{occupancy rate of Airbnb}$$

3.3 Control variables

During the whole model study, the control variables we used, including the number of hotels and Airbnb, the influence degree of government policies and sample distribution. The number of hotels and Airbnb is affected by the business status and the personal situation of the business owners lead to the change of number of samples during the research. So the number of samples needs to be used as a control variable. Moreover, due to the impact of COVID-19, the Chinese government has also issued many policies to limit the movement of people, such as forcing hotels to stop operating. But Airbnb may be less affected by the policy for it has some regulatory issues. Meanwhile, the

distribution of Airbnb and hotels in different cities in China is not the same. In this paper, we used policy influence and distribution as a control variable to achieve the consistency of the hotel industry and Airbnb.

3.4 Model estimation

Two models should be created by using the cross-section data of the number of confirmed patients, occupancy rate of hotel and occupancy rate of Airbnb. So we set up the following two models:

$$Y1 = \beta01 + \beta1X + u1 \quad (1)$$

$$Y2 = \beta02 + \beta2X + u2 \quad (2)$$

Where, Y1= occupancy rate of Hotel, Y2= occupancy rate of Airbnb, X=The number of confirmed patients

By modeling the weekly statistical data from January 6 to April 19, we found a linear relationship between the number of confirmed cases and the occupancy rate in the hotel industry and Airbnb (See Appendix).

4 RESULTS

Table 1 shows two groups of linear regression analysis, including the number of confirmed patients and hotel occupancy rate, and the number of confirmed patients and Airbnb occupancy rate. This section will discuss the coefficient of determination (R-squared), F-test, and regression coefficient through the linear regression analysis. Model 1 shows the correlation between the number of confirmed patients per week and the weekly hotel occupancy rate from January 6 to April 19. Model 2 shows the correlation between the number of confirmed patients per week and the weekly Airbnb occupancy rate from January 6 to April 19. Due to the consistency of the dependent variable and time selection, this section can also provide a simple comparison of the impact of COVID-19 on hotels and Airbnb.

Model 1 (Table 1) shows the linear regression analysis results of the number of confirmed patients and hotel occupancy rate, from January 6 to April 19 in the Chinese market. This linear regression analysis takes the number of confirmed patients as independent variables and the hotel occupancy rate as the dependent variable, which can be interpreted as the impact of COVID-19 on the Chinese hotel market. The results of Model 1 can be mainly explained by three values, including R-squared, F-test, and regression coefficient.

R-squared can be used to analyze the model fit. In Model 1, the R-squared is 0.482534, which means that the number of confirmed patients can explain the 48.2534% change in hotel occupancy rate. Besides, the F-test can be used to check whether the regression model makes sense. Model 1 passed the F-test ($F=12.12242$, $p=0.0041 < 0.05$), which means that the number of confirmed patients affects the hotel occupancy rate. At the same time, the regression coefficient of Model 1 is $-6.44E-06$ ($t=-3.481726$, $p=0.0041 < 0.01$), which means that the number of confirmed patients and hotel occupancy rate are significantly negatively correlated. This result shows that from January 6 to April 19, with the increase in the number of confirmed patients, the Chinese hotel market faced the risk of a decrease in occupancy. Therefore, Hypothesis 1, which proposes that COVID-19 has a negative

impact on the Chinese hotel market, was supported by Model 1.

Model 2 (Table 1) shows the linear regression analysis results of the number of confirmed patients and the Airbnb occupancy rate, from January 6 to April 19 in the Chinese market. This linear regression analysis takes the number of confirmed patients as independent variables and the Airbnb occupancy rate as the dependent variable, which can be interpreted as the impact of COVID-19 on Airbnb's Chinese market. The results of Model 2 can be mainly explained by three values as well, including R-squared, F-test, and regression coefficient.

In Model 2, the R-squared is 0.314691, which means that the number of confirmed patients can explain the 31.4691% change in the Airbnb occupancy rate. Moreover, Model 2 passed the F-test ($F=5.969542$, $p=0.029585<0.05$), which means that the number of confirmed patients is related to the Airbnb occupancy rate. Meanwhile, the regression coefficient of Model 2 is $-6.18E-07$ ($t=-2.443265$, $p=0.029585<0.05$), which means that the number of confirmed patients and Airbnb occupancy rate are negatively correlated. This result shows that from January 6 to April 19, with the increase in the number of confirmed patients, Airbnb's occupancy in China was at risk of reduction. Thus, Hypothesis 2, which proposes that COVID-19 has a negative impact on Airbnb's Chinese market, was supported by Model 2.

According to the analysis of regression coefficients in Models 1 and 2, COVID-19 has more impact on the Chinese hotel market than on Airbnb's Chinese market. In the regression equation, coefficient of determination and regression coefficient can explain the correlation and influence degree between variables respectively. Model 1's R-squared (0.482534) is larger than Model 2's R-squared (0.314691), which means that the number of confirmed patients and hotel occupancy rates has a stronger linear relationship. The absolute value of Model 1's regression coefficient ($6.44E-06$) is larger than Model 2's corresponding figure ($6.18E-07$), which means that the number of confirmed patients has a greater impact on the hotel occupancy rate. Therefore, in China, COVID-19 has a greater negative impact on the hotel industry than Airbnb.

5 DISCUSSION

Based on the result, the hypotheses that were made in sector 2.3 are well illustrated and supported by the data analysis. The business situation of hotels and Airbnb in China, which is closely linked to the tourism industry and the mobility of people, are vulnerable to COVID-19. The situation even become severe when it comes to the hotel industry. Under this circumstance, the practices of Chinese government and companies that are likely to reduce the impact of this epidemic are of great importance for these accommodation operators to survive and evolve so as to produce measures and mechanisms to deal with such situations in the future (Brent et al. 2011). This part will offer some suggestions both for the government and companies to adopt and make some forecasts about the future operation situation for hotels and Airbnb.

The core idea for these operators to survive from COVID-19 is to form their own core competitiveness that enables them to become independent and distinctive compared to other competitors. Things might become much different if they treat this void as a business opportunity (Athena et al. 2019). More importantly, these internal measures taken by the companies and landlords will make them become capable of responding effectively to these undesirable impacts caused by the force majeure in their future operation practices.

Companies that make money from hotels can change their business strategies during the

epidemic. Firstly, they should reduce operating costs especially the rigid spending that will affect the profit margin of the companies to a large degree. When the hotel is completely closed or part of the business is offline, the operation cost of the hotel can be reduced by temporarily closing the department floors, elevators, facilities, and shortening the business hours (Christoph and Datta 2006). Besides, in the absence of detailed laws and regulations promulgated against the epidemic, companies in the hotel industry may consider reducing rigid expenditure through negotiation (Elena et al. 2015). For example, the hotel may consider negotiating with employees to pay wages for a specific period of time at a lower standard, the lessor of the leased property to reduce rents or delaying rent payments based on preferential policies promulgated by the state, fairness principles or negotiating with platforms to reduce the franchise and platform fee.

Secondly, they are supposed to take a good care of their employees that can be described as the foundation of a firm and the power for recovery. Because of the impact of the epidemic, some hotel employees cannot work normally. The hotel can optimize the management structure or organize a variety of themed trainings to enhance the required skills of their employees through this period of time (Lina et al. 2010). Some employees who still have to work should be given adequate human care and safeguards that protect them from the virus.

Lastly, hotels may expand their offline revenue channels so as to reduce risk resulted from the single business model instead of relying heavily on the income which comes from accommodation (Deng et al. 2019). For example, some five-star hotels in China offers food delivery services during business closure phase, which is an effective practise and can be learned by most of hotels to increase revenues. At the same time, some hotels locating in the main commercial areas can try to provide specialized isolation rooms for workers of the operating enterprises, which is also a critical method to ease the pressure on hotel operations at the present stage.

For landlords who utilizes Airbnb to rent their apartments need to take active measures as well. Likewise, they also have to reduce operating cost as the first step. But the good news is that the expense of homestay is easier to control compared with hotels because of smaller business scale allows most of them to have more time and energy to take care of their houses for renting (Zaid et al. 2020). For example, they can clean the room by themselves rather than hiring professional cleaning staffs. However, because the cleaning process is not performed by professional personnel, many guests may be worried about the safety of the room and thus distrust the landlords. As a result, landlords should enhance the disinfection process by sterilizing public areas such as restaurants, public facilities like elevator buttons, air- conditioning filters, kitchens, hot water systems, mops and other non-closed sewage pump regularly (Alrawadieh et al. 2020). In addition, the Airbnb can provide some discount for its users so as to attract them or charge landlords with less intermediary fees to reduce their pressure during this special period (Panniello and Giovanna 2019). Through such mutual cooperation and understanding, there is a great chance that they can survive from this concession and co-exist in the future.

It is of great significance that Chinese government can take effective advantage of the visible hands to coordinate the accommodation industry market both directly and indirectly. These policies and measures made by the government will have a profound influence on the market immediately. Firstly, the government should continue to introduce supporting policies that are conducive for reducing business operating costs and fixed expenditures. For example, the policy which allows accommodation companies to delay payment towards their existing bank loans, reduces the real estate tax and land use tax, prolongs the period of rental reduction and exemption for accommodation companies, strengthens the negotiation mechanism with the Online Travel Agency,

formulates response strategies and landing support service in different epidemic periods, provides more policies in some aspects in terms of marketing, service commissions, quality control and etc. In addition, Chinese government can provide targeted subsidies to compensate companies that are greatly affected by the COVID-19 to help them go through this tough period and increase demand by placing more government orders. The direct financial subsidies can help the companies reduce the burden of maintaining current operations while the expanding demand may post a positive effect on the employment rate as it can provide more jobs.

As the epidemic has gradually been taken under control in China, more and more bans and restrictions will be abolished. Without the limitation of the travel bans, there will be more tourists and labor flow who might bring accommodation needs. As a result, the homestay industry and the hotel industry are likely to gradually recover in the coming months. Accommodation companies have also greatly enhanced the intelligence, digitization and automation of customer service through the digital applications and platforms. For the accommodation industry, the epidemic has accelerated the understanding and acceptance of intelligent services by both the supply and demand sides in this industry. Whether it is the "Reassured Hotel" launched by the Home Inn group, a well-known Chinese hotel chain, or the "contactless services" provided by some famous hotel groups successively. Accommodation companies are encouraged to provide guests with more efficient and healthier services through mobile clients, hotel kiosks and artificial intelligence devices to reduce interpersonal contact and avoid cross infection (Christopher et al. 2018). Even after the epidemic, intelligence will be the camp concept which has a huge impact on this industry.

6 CONCLUSION AND LIMITATIONS

In this paper, we used the regression model to verify the hypothesis that COVID-19 negatively impacts the hotel industry and Airbnb in China, and the result drawn through comparison that the COVID-19 epidemic has a greater negative impact on hotels than on Airbnb. Hotels are suggested to reduce operating costs, expand revenue streams to reduce risks associated with a single business model, and take good care of their employees. For landlords, they are expected to reduce operating costs as well, and consider charging strategies for special periods. Moreover, the government should continue to introduce supporting policies for reducing business operating costs and especially the fixed expenditures, as well as provide targeted subsidies. In terms of the future, the expectation of the accommodation industry is positive. The direction of this industry in the future is still enhancing the intelligence, digitalization, and automation of customer service through the digital applications and platforms.

There are several limitations to this research. Firstly, it has been five months since the outbreak and has not yet ended, industry statistics are limited. The duration of sample data is from January 6 to April 19, which leads to the sample size relatively small. It would have some influence on the accuracy of the results. Secondly, hotel occupancy rates and Airbnb occupancy rates are second-hand data from two different institutions. The survey samples and scope may be different. As for the model, there are still some part of data (1 - R-squared) could not be explained by the number of infected patients. Under the socialist economic system with Chinese characteristics, the state's macro-control cannot be ignored. This study abstracts the COVID -19 situation into the number of existing infections in China and studies its impact. Other factors such as policy and the situation in other countries may also have varying degrees of influence, which can be an area for further research in the future.

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CONFLICTS OF INTEREST

The authors state no conflict of interest.

APPENDIX

Eviews output

Table 1: Comparison of Occupancy rate of Hotel and Airbnb measured by The number of confirmed patients

Dependent variable:	Model1		Model2	
	Occupancy rate of Hotel		Occupancy rate of Airbnb	
	CONSTANT	X	CONSTANT	X
	0.390237	-6.44E-06	0.122546	-6.18E-07
	(0.045334)	(1.85E-06)	(0.006202)	(2.53E-07)
P-value	0.0000	0.0041	0.0000	0.029585
<i>R</i>	0.482534		0.314691	
F Test value	12.12242		5.969542	
t-Statistic	-3.481726		-2.443265	

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