Review of the Influence of Covid-19 on China's Tourism

Yuqian Sun

Jurong Country Garden School
**Corresponding author. Email: 2015918893@qq.com*

ABSTRACT
At the end of 2019, COVID-19 with strong infectivity broke out in Wuhan, China, which caused a short but serious blow to China's tourism industry. As a part of China's economic development, tourism has maintained a state of continuous growth and has a good developing trend before the outbreak of the epidemic. However, as the outbreak coincided with China's golden tourism period, people were restricted from traveling due to the epidemic, and some scenic spots were closed due to cooperation with epidemic prevention and control. As a result, the income of tourism is bleak, and the annual income of people who rely on tourism has caused trauma to a certain extent. This paper summarizes and concludes the influence of COVID-19 on China's tourism industry by analyzing and summarizing the data and charts, and draws the conclusion that COVID-19 has different impacts on China's tourism industry, such as tourism image.

Keywords: *Tourism, COVID-19, China, Tourism demand*

1. INTRODUCTION

COVID-19 broke out at the end of 2019, Wuhan was closed on January 23, and was not opened until April 8. At the same time, the majority in China were also in the state of home isolation, which provided a good foundation for the implementation of epidemic prevention and control measures, and curbed the further outbreak of the epidemic. Home isolation also means that almost no one goes out for travelling, and the tourism industry is almost unprofitable. This paper aims to summarize and analyze the impact of COVID-19 on China's tourism industry in 2020, and China's countermeasures are also included, thus making constructive suggestions to the future development of China's tourism industry.

2. RESEARCH METHOD

At present, quantitative and qualitative research are the main ways to study the demand and the impact of COVID-19's tourism market. Common quantitative studies include questionnaire survey, mathematical statistics, cross analysis and so on. Xu Ping investigated the travel needs of COVID-19 after the end of the survey and investigated the gender, age, occupation, education, degree, income level and marital status of the respondents [1]. Then, using the method of mathematical statistics and cross research, this paper makes a comprehensive analysis from the aspects of tourists' willingness to travel, travel modes, planned travel time, travel location and accommodation. Xu Ping conducted a random sampling survey in the form of network and collected 320 valid samples, of which women accounted for 56.23% and men 43.75%. The effective recovery was 91.95% [1].

3. DATA ANALYSIS

Dong Lin and Li Qinge concluded that China's tourism market has solved most of China's employment problems by summarizing the data released by the National Bureau of statistics [2]. Under the influence of COVID-19, China's employment situation is very grim. Tourism, as a pillar industry of the national economy, is greatly affected by this epidemic. Yang Xiaofeng and Liu Tao concluded the impact of COVID-19 on the tourism industry in the upper and middle reaches by summarizing the literature [4]. Cao Yang and Han JinFang concluded from the benchmark data of simulation calculation released by China Tourism Research Institute that the number of inbound and outbound tourists in China has decreased significantly and there has been a rare empty schedule in the tourism economy. In 2020, the number of domestic tourists in China increased negatively by 43% year-on-year to about 3.426 billion. The number of people entering the country in the

whole year increased negatively by 80% year-on-year to about 28.95 million. The number of outbound tourists increased by 80% year-on-year, about 30.25 million. In 2020, China's tourism revenue and international tourism revenue grew negatively by 52% and 90% respectively, which is 2.76 trillion yuan and 13.2 billion US dollars [5].

The total tourism revenue increased by 52% year-on-year, only 3.15 trillion yuan. Small and medium-sized enterprises are facing bankruptcy due to the "retreat and reform tide" caused by the epidemic, and China's tourism image has been damaged by the World Health Organization (WHO)'s early warning on tourism in China issued by many countries.

4. RESEARCH MODEL

Domestic scholars mainly study the impact of the COVID-19 on tourism and the total tourism revenue based on the seasonal time series model SARIMA. SARIMA model has obvious periodic changes in some time series. This cycle is caused by seasonal changes (including quarterly, monthly, weekly and other changes) or some other inherent factors. This kind of sequence is called seasonal sequence. In the economic field, seasonal time series is more common, such as quarterly time series, monthly time series, weekly time series, etc. The main research here is the quarterly and monthly time series. Kou Wen and Chen Yuxin summarized the chart data based on SARIMA's research on Hainan, a representative tourist city in China [6]. As shown in Figure 1-4, DXS sequence is a step size of X sequence. It is the first-order seasonal difference of 12, so d = 0, d = 1, s = 12. The correlation coefficient and partial auto-correlation coefficient are within twice the standard deviation, which can be taken as P = q = 0. When self Q ≥ P > 1, the DXS auto-correlation coefficient and partial auto-correlation coefficient of the sequence are random sequences. Considering P = 1, q = 2, the main models include SARIMA (1,0,2) (0,1,0) 12 and SARIMA (1,0,3) (0,1,0) 12. Try to fit ARMA (1,2) and ARMA (1,3) models to find AIC information criteria. The model with the minimum value is fitted repeatedly to eliminate small changes in each model. Finally, the model determined by AIC criterion is ARMA (1,3) model (Figure 4). The residual sequence of the model shows that the random error term of the model is a white noise sequence. This model is very suitable. At the same time, the model is used to predict the period from March 2016 to December 2019. The average error between the predicted value and the actual value is 1.96%. The fitting effect is very ideal. Therefore, it is finally determined that Hainan Province will receive domestic tourists from January 2014 to December 2019. The time series model of the number of night tourists is SARIMA (1,0,3) (0,1,0) 12. SARIMA (1,0,3) (0,1,0) 12 model pair was used. It is beneficial to simply predict the number of domestic overnight tourists received by Hainan Province from January to December 2020. Comparing the predicted value with the actual value, the difference between the two is regarded as the impact of the epidemic on domestic tourists. See Figure 1 for specific results [6].

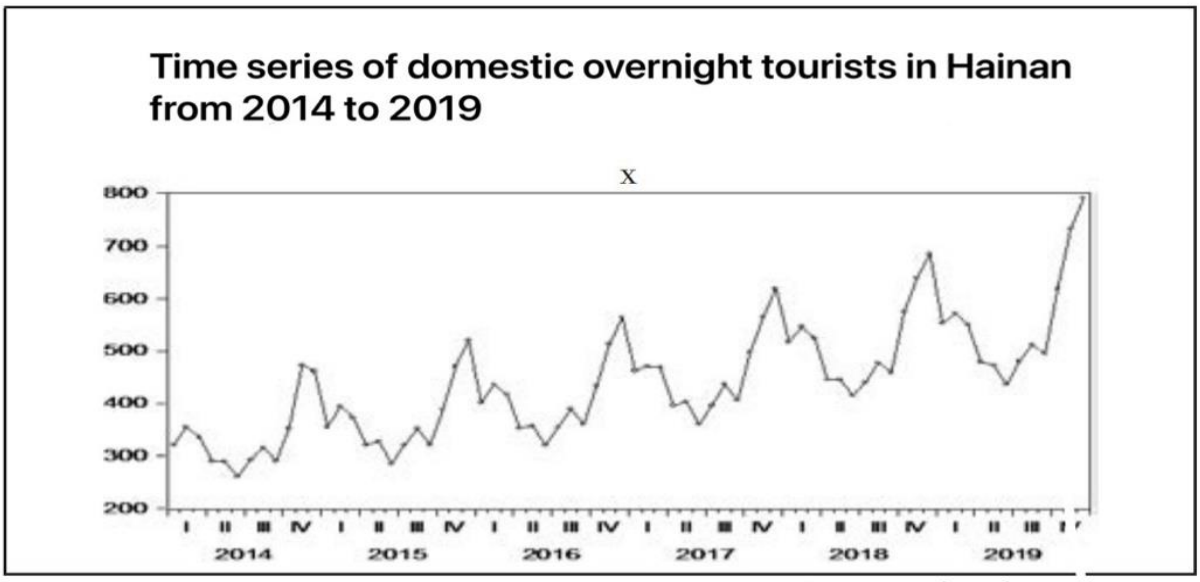

Figure 1 Time series of domestic overnight tourists in Hainan from 2014 to 2019.

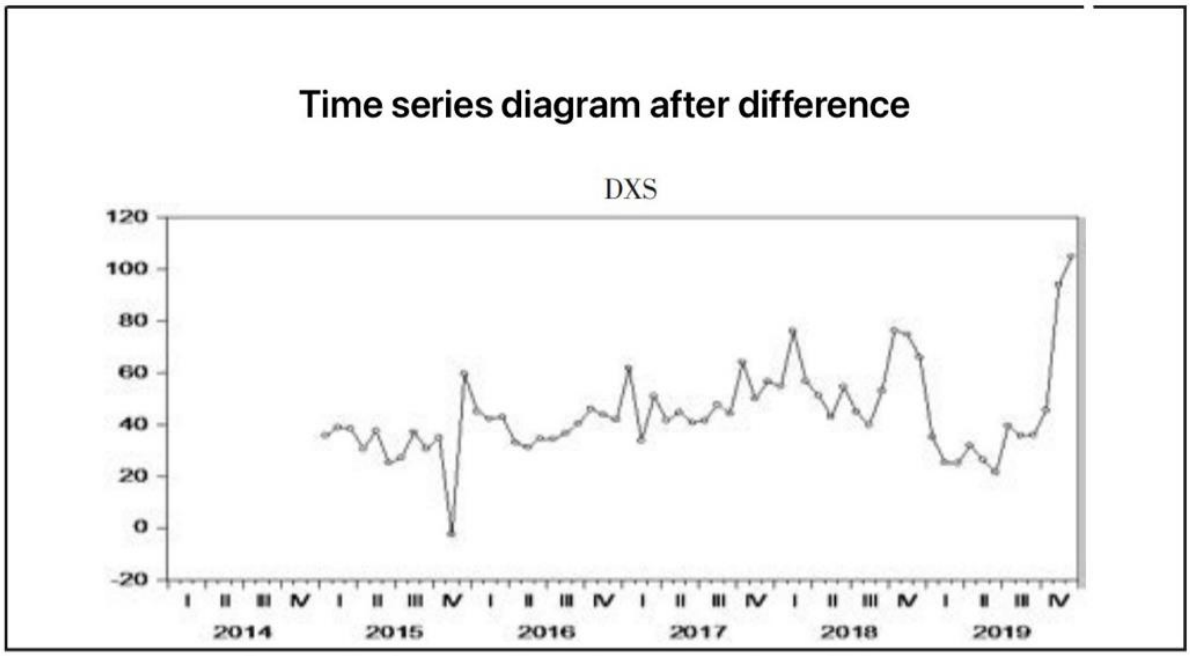

Figure 2 Time series diagram after difference.

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.482	0.482	14.661	0.000
		2	0.241	0.011	18.382	0.000
		3	0.074	-0.060	18.742	0.000
		4	0.068	0.068	19.052	0.001
		5	-0.011	-0.075	19.061	0.002
		6	-0.115	-0.124	19.977	0.003
		7	-0.044	0.099	20.112	0.005
		8	-0.041	-0.039	20.233	0.009
		9	-0.007	0.011	20.237	0.017
		10	0.014	0.049	20.252	0.027
		11	0.063	0.037	20.555	0.038
		12	0.190	0.167	23.362	0.025
		13	0.257	0.138	28.584	0.007
		14	0.062	-0.224	28.892	0.011
		15	-0.030	-0.021	28.967	0.016
		16	-0.151	-0.137	30.901	0.014
		17	-0.057	0.073	31.186	0.019
		18	-0.090	-0.001	31.906	0.023

Figure 3 Auto-correlation coefficient and partial auto-correlation coefficient of DXS series.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	49.82583	4.404899	11.31146	0.0000
AR(1)	0.905432	0.081121	11.16146	0.0000
MA(1)	-0.456886	0.127290	-3.589324	0.0007
MA(3)	-0.455423	0.106547	-4.274382	0.0001
R-squared	0.356129	Mean dependent var		44.32559
Adjusted R-squared	0.321009	S.D. dependent var		17.35432
S.E. of regression	14.30012	Akaike info criterion		8.223802
Sum squared resid	11247.14	Schwarz criterion		8.364652
Log likelihood	-238.6022	Hannan-Quinn criter.		8.278784
F-statistic	10.14029	Durbin-Watson stat		1.778182
Prob(F-statistic)	0.000020			
Inverted AR Roots	.91			
Inverted MA Roots	.96	-.25-.64i	-.25+.64i	

Figure 4 Model parameter estimation results.

Kou Wen and Chen Yuxin used SARIMA (1, 0, 3) (0, 1, 0) 12 model to pair [6]. A simple forecast of the number of domestic overnight tourists received by Hainan Province from January to December 2020 is beneficial. The predicted value is compared with the actual value, and the difference between the two is regarded as the impact of the epidemic on domestic tourists. From the prediction results, the impact of the outbreak of the epidemic on tourism in Hainan province is inverted U type trend.

5. IMPACT ON TOURISM

China's tourism industry is one of China's pillar industries, and has an important role in promoting the national economy. Dong Lin and Li Qinge summed up the steady growth of the number of tourists before China was affected by COVID-19 again by Figure 1 and 2, and according to the statistics of the National Bureau of statistics, the expenditure of urban residents and rural residents on tourism increased [2]. The development prospect of tourism market is considerable. Similarly, before 2020, China's tourism revenue also showed a stable growth. From the perspective of travel scale, number and income, China maintains a good development trend in both domestic tourism and inbound and outbound tourism. As shown in the Figure 1 and 2.

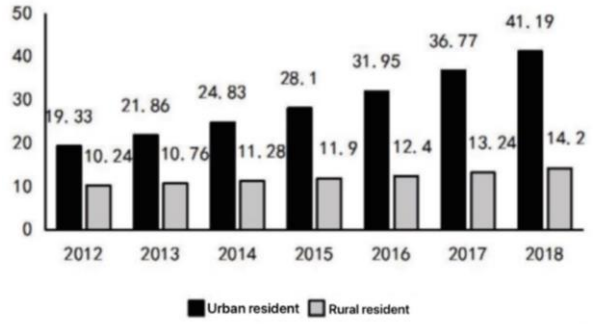

Figure 5 Urban and rural residents in China change the number of tourists from 2012 to 2018 (unit: 100 million person times).

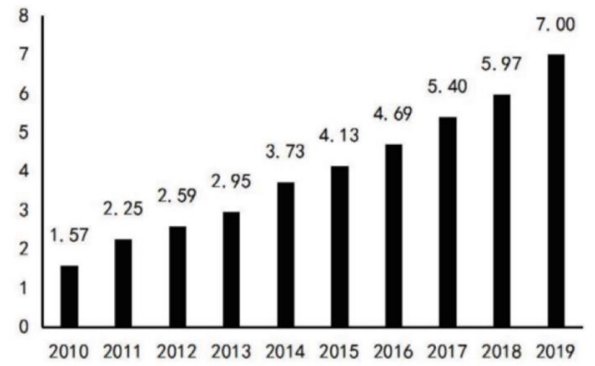

Figure 6 China's tourism revenue from 2010 to 2019 (unit: trillion yuan).

Dong Lin and Li Qinge summed up the impact of COVID-19 on China's tourism industry, which is mainly divided into short-term and long-term indirect effects [2]. In the short term, it is mainly divided into the following points: the direct sharp reduction of business volume, the substantial reduction of revenue, the survival challenge of tourism and the serious damage to tourism related industries. The long-term indirect impact is that the tourism market shrinks to a certain extent, shakes tourists' travel intention and tourism entrepreneurship environment, and faces a crisis. The outbreak of the epidemic has an impact on tourists' psychology and behavior. Yang Xiaofeng and Liu Tao made a comprehensive analysis of the impact of the tourism industry in the upper and middle reaches of COVID-19, specifically, the tourism industry, upstream industry, and transportation industry under the hotel industry [4]. Due to the policy of epidemic prevention and control, the number of flights has been reduced, and the Railway Bureau has extended the online handling of free refund. Folinas S, Metaxas T proposed that after the full outbreak of the epidemic, most airlines directly canceled flights in China [7]. In response to the government's call, all tourism enterprises are closed, and because tourism enterprises are a service industry supported by passenger flow, they are affected in the epidemic the most and may continue to suffer the impact. As a result, the occupancy rate of the tourism based on the hotel industry has decreased significantly. Xu Ping discussed the trend of tourism demand under the COVID-19 epidemic situation, and concluded the following points: China's tourist demand is temporarily suppressed, but the overall demand is still strong, and the surrounding tourism and self driving travel may increase [1]. The tourism industry needs to strengthen the details of health services and do a good job in the normalization of epidemic prevention and control. It is described that the impact and consequences of COVID-19 on tourism development can be divided into three categories. First is the COVID-19 situation affected the development of tourism industry. Second is the specific performance of COVID-19's impact on tourism development. And the third is COVID-19's main consequences on tourism development [3]. The COVID-19's influence on tourism development is great with a board scope and a long time period. The specific effects of COVID-19 on tourism development are as follows: the survival of tourism enterprises is challenged, the loss of tourism industry is huge, and tourism industries are affected and suffering from "cold shoulder". The main consequences of COVID-19 on tourism development are: the decline in tourism revenue, the decrease in the number of tourists in the overall tourism industry, and the fact of tourism industry failing to achieve the original revenue target.

6. STRATEGIES AND COUNTERMEASURES ADOPTED

Due to the difficulties caused by the epidemic in China, some major policies and measures guided by the government are needed to help various industries. Not only does affected tourism industry need the help of the government, but also it needs to take self-help measures. Wu Yanqing believes that to promote tourism, the government needs to play a leading role in helping the recovery and development of tourism, and the tourism industry needs to seek new opportunities for development under the epidemic situation. it is also necessary for industry associations to play a role [3]. The government needs to formulate crisis response strategies, guide the tourism industry to take the initiative, increase policy support, solve the worries of enterprises, and make plans according to different regional conditions. New development opportunities, such as the development of online tourism, the modification and adjustment of tourism marketing strategy and the shortcomings of enterprise internal management. Cao Yang and Liu JinFang divided the strategy into three levels: macro, meso and micro [5].

At the macro level, the government needs to improve its emergency response capacity and formulate emergency plans for tourism, build an information system for public health emergencies in tourism industry to improve the efficiency of emergency disposal; the government emergency response system for tourism crisis caused by COVID-19 should be improved, the publicity and education

on COVID-19's response should be enhanced, the public awareness of crisis should be raised, and the ability to deal with crises should be strengthened.

The meso level is mainly about the cooperative strategy of the association. The tourism industry association should make a clear positioning and do a good job to link between the government and enterprises. The benign interaction between the Tourism Association and the government, enterprises and the market needs to be strengthened, and a think tank in the tourism industry needs to be built to help achieve the new development of the tourism industry.

Micro level is the main strategy for enterprises. To block public health emergencies, tourism enterprises should face the crisis directly and advocate responsibility first. They need to actively carry out self-help to grow against the trend in difficulties, use the "shutdown period" to enhance the staff training and prepare for recovery, strengthen their brand construction, extend the industrial chain and coexist with a variety of profit models.

7. CONCLUSION

China's tourism industry suffered great losses under the strong attack of COVID-19. It had to close its doors to respond to the call of the state. In the face of today's situation, tourism should actively develop new business methods and make emergency plans. At the same time, employees are needed to be trained during the closed time, so that consumers after the epidemic can have a better service experience.

Moreover, the government should provide some subsidies and supporting policies for tourism industry to help it overcome the difficulties and promote the future development. Finally, although the author used the SARIMA model and data analysis to explore the impact of COVID-19 on China’s tourism industry in this paper, further studies are still needed to be done to collect more data and stronger evidence.

REFERENCES

[1] Xu Ping. Tourism market research and demand analysis under COVID-19, 2021, 61-63.

[2] Dong Lin, Li Qing'e. Development issues and countermeasures of China's tourism industry under the impact of COVID-19, 2020, 16-23.

[3] Wu Yanqing. Difficulties faced by the tourism industry in the context of COVID-19 and countermeasures, 2020, 179-181.

[4] Yang Xiaofeng, Liu Tao. Review of the impact of COVID-19 on tourism and countermeasures, 2020, 47-50.

[5] Cao Yang, Han Jinfang. Study on the impact and countermeasures of sudden public health events on China's tourism industry, 2021, 59-63 .

[6] Chen Yuxin, Kouwen. The impact of COVID-19 on domestic tourism, 2021, 48-50.

[7] Folinas S, Metaxas T. Tourism The Great Patient of Coronavirus COVID-2019[J]. International Journal of Advanced Research, 2020, 365-375.