

Research on Cloud Tourism Mode Based on the Belt and Road

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ABSTRACT

With the theme of reviving the tourism industry after the epidemic and the application of the meta universe as the starting point, the article explores the marketing mode of cloud tourism, analyzes the feasibility of the cloud tourism marketing mode by using the uni-variate regression model and the questionnaire mode, and further provides suggestions for the industrial transformation of China's tourism industry.

Keywords: *Integration of online and offline, Tourism development, The Belt and Road.*

1. INTRODUCTION

The outbreak of COVID-19 in 2020 has had a serious impact on China's tourism industry. Over the past two years, China's domestic anti epidemic action has achieved good results, with normal production and living order and sustained positive economic growth. At present, China has begun to implement a dynamic zero clearance policy to encourage residents to travel in an orderly manner. Therefore, some areas, taking Guangzhou as an example, put forward the proposal of applying "cloud universe" technology to promote tourism and carried out preliminary practice. Benefiting from the rapid improvement of the epidemic situation, the tourism industry has recovered rapidly since 2021 due to the Internet promotion technology. In the first three quarters of 2021, the number of tourists in China reached 2.689 billion, an increase of 39.36% over the same period in 2020. In the first half of 2022, various places used modern technology to open up more marketing channels, which would provide new development opportunities for the tourism industry. In the first half of 2022, the outflow of tourists from most areas would recover to 25-50% of that before 2019, among which the recovery rate of western Xinjiang, Western Sichuan and the surrounding areas of Changbai Mountain in north will be higher than 50%, and the overall trend will be good.

2. REVIEW OF RELATED RESEARCH

Meta-verse refers to the open-source platform attached to the closed-loop economy with high integration of the virtual world and the real world. Meta universe combines the Internet with artificial intelligence, information, VR, AR, Mr and a series of virtual reality. The way to realize the meta - universe is through immersion and superposition, radical and gradual, open and closed (Shenyang, Tsinghua University, 2021). Feng Xuegang and Chen Xin combine the meta universe with the cultural tourism industry and put forward the concept of "cultural tourism meta universe". They believe that the cultural tourism meta universe has application value in deepening the cultural tourism immersive experience, promoting the cultural tourism scene revolution, and rebuilding the cultural tourism industry value. [1]

3. CLOUD TOURISM DEVELOPMENT STATUS AND PROBLEMS TO BE SOLVED

3.1 Post Epidemic Recovery of Tourism Industry

According to the data released by the Ministry of culture and tourism, compared with 2019 (before the epidemic), The living standard of residents has been steadily improved, and tourism is an important

part of residents' experience consumption. [2] The market should still maintain positive confidence and attitude to meet the current challenges. In terms of transportation and accommodation, the scale of travel transactions and online accommodation transactions in China's online market in 2022 are expected to return to the level of before epidemic. During the summer holiday of 2022, the traditional tourist attractions in Xinjiang, Guizhou and Yunnan have been crowded, the cost of air ticket and hotel have return to the same price of before epidemic. And the number of tourists has returned to the same level in previous years. (data source: Ministry of culture and Tourism) in July 2022, China's civil aviation industry placed an order of US \$37 billion for Airbus to purchase 292 aircraft, which also shows that the country is full of confidence in the future transport capacity demand. And the country is ready to open travel aboard.[3]

3.2 Development Status of Cloud Tourism

The rise of cloud tourism stems from the development of the epidemic. During the epidemic period, due to its impact on the long-distance travel business, some leisure APPs, such as Xiaohongshu, began to promote cloud tourism. Merchants attract tourists by publishing videos and posts on local landscapes and food in Xiaohongshu and Tiktok. Cloud tourism not only fills people's yearning for travel, but also becomes a "pre-play" mode. Many users collect local popular restaurants, scenic spots and play clocks in advance at ordinary times to "stamp" for travel after the epidemic. For this reason, the rise and promotion of cloud tourism can not only bring spiritual recuperation and knowledge supplement to people at home, but also bring a new round of dawn to the cultural and tourism industry. They can inject strong power into the recovery and development of the industry, and enable traditional tourism to obtain a new display form and development trend. Consumers can conduct immersive visits by wearing VR devices. This method can meet the requirements of consumers to travel around the world without leaving home with the most realistic experience. [4] This not only meets the personalized needs of consumers, but also saves the management costs of merchants. After the outbreak of the epidemic, the importance of digital tools for tourism destination promotion has become increasingly prominent. The application of digital tools has deconstructed the service content of the tour guide profession. Tour guides around the country also use new media to promote online, so as to attract more tourists to

book their own services online and realize self-management of tour guide services. This makes the tour guide explanation service an independent travel product. Their high-quality tour explanation service is widely spread through the we media platform, so that tourists can more intuitively understand the tour guide's explanation level and group leading ability, and yearn for the destination. The tour guide explanation service also takes the opportunity to realize the tourism destination marketing function. Through the construction of the digital platform of the tourism meta universe, the tour guide can also become a virtual tour guide and provide online services in the meta universe. Due to the real name system requirements of the platform payment merchants, the authenticity of the tourist guide's identity can be verified, and the related service complaints can also be resolved on the platform. It is conducive to increasing the trust between tour guides and tourists. [5]

Users of online tourism products have been mainly around 30 years old (60%) since 209. The main reason is that 30-year-old people are the main decision-makers and payers of tourism services (while the elderly and young people who actually use the services are the influencers of tourism decisions). Currently, cloud tourism service platforms for tourists with high activity include Xiaohongshu, Tiktok, Wechat, Litchi, Feizhu, etc. The digital platform of "China tourism chain" based on blockchain technology is targeted at businesses. Various cultural and tourism enterprises realize distributed accounting of enterprise data through the chain, open up the upstream and downstream supply chains of tourism, realize digital assets, and reduce the transaction and financing costs of enterprises.[6]. Taking Wechat's live broadcast mode as an example, its small group tour products will have the opportunity to become the mainstream of small, medium and micro products. The information carrying capacity is rich and concentrated. It can interact and communicate with users in depth, and has a strong fat tail effect on the volume of communication. If the live broadcast mode is used, a good anchor can optimize the product display and trigger customers' unplanned consumption. For example, after the outbreak, many local officials also participated in the live broadcast sales of local agricultural products, and achieved good results. In terms of short videos, Ganzi Prefecture of Sichuan Province has also benefit from the "media pioneer" tourism director and Tibet boy Ding Zhen, who promote local tourism products online. The promotion of tourism

in Tibetan areas in Sichuan has been greatly reversed. And become a good example for China's poverty alleviation.

Generally speaking, on the demand side, digital experience has deeply penetrated into the lives of Chinese people. With the improvement of economic level, consumers have higher requirements on the cost performance and quality of tourism products, and the epidemic has also provided higher requirements on the safety of tourism products. The privacy of online services is conducive to tourists to obtain better personalized customized products. On the supply side, digitization has higher requirements on the internal management and external services of merchants, and the cost has decreased. Live broadcast and short video have lowered the threshold for merchants, especially small, medium and micro tourism enterprises, to enter the market. Content operation is more important. The growth of private traffic is an important means to improve the flow of merchants and thus improve the actual purchase. While the venues of tourism services are expanded from offline stores to online platforms, which helps businesses, especially small, medium and micro enterprises, reduce operating costs.

In July 2022, China held the international tourism exchange and cooperation development forum under the framework of RCEP, marking China's action to start the recovery of outbound tourism, and the primary partner to start outbound tourism is a regional ally. As a member of the "China Indonesia community", Indonesia is undoubtedly the most important partner of China, and the cooperation between the two sides can be extended to the tourism industry. Because before the epidemic, Indonesia was already a key area for Chinese tourists to travel abroad, the positive impact of RCEP will continue to ferment, and will provide richer and more exciting innovation possibilities for future international tourism exchanges and cooperation. The completion of the Jakarta Bandung high-speed railway contracted by China also provides better hardware for Indonesia's tourism development. The cooperation between the tourism industry of the two countries will play a more constructive role in the "the Belt and Road" initiative and the Asian tourism promotion plan. It will make new contributions to the prosperity and development of world tourism and jointly create a better future. It also provides a good reference for other developing countries to use modern technology to develop the tertiary industry. Before the outbreak, Indonesia was one of the top 15

countries for Chinese tourists to travel abroad. The annual compound growth rate of Komodo-Menado- Lombok line is 260%. (data source: Ministry of culture and Tourism) during the Indonesian President's visit to China in 2022, China and Indonesia were upgraded into countries of China Indonesia community of shared future, and became another important partner of China after Pakistan. Therefore, it is of both political and economic significance to consider opening the door to Indonesia as a promotion country for overseas travel.

4. RESEARCH METHODS AND CONCLUSIONS

4.1 Questionnaire Survey and Conclusion

4.1.1 Data Source

The researchers study whether the development of "cloud tourism" can drive tourism consumption from the perspective of behavioral economy. 200 questionnaires were distributed and 173 valid data were collected. Using the statistical analysis software SPSS statistics 26, exploratory factor analysis was conducted on the questionnaires of 173 participants. The analysis angles included the questionnaire survey, content validity analysis, descriptive analysis, status analysis, correlation analysis, etc.

4.1.2 Content Validity Analysis

The design process of the questionnaire is as follows: firstly, the hypothesis is put forward whether science and technology can drive the development of "cloud tourism". The first step is to ask the participants about their life background, and then ask the participants about their willingness to "cloud tourism" and their understanding of the concepts of cloud tourism and meta universe to lead to the following questions. Next, the research ask the participants what kind of requirements they want "cloud tourism" can meet them. Those participants' requirements include options for future "cloud tourism" improvement. The participants are asked about their attitude towards the current situation of cloud tourism. The next one is a scale question, which is about how cloud tourism can promote the progress of tourism. The last one is an open-ended question, which aims to assume that people's tourism will under the condition of high integration of meta universe and "cloud tourism". First, the questionnaire was pre-tested. Problems

were found in the process of using and testing the questionnaire, such as too few questions and too many questions. Therefore, the formal questionnaire was adjusted and added.

4.1.3 Descriptive Analysis

A total of 173 people participated in this experiment, and the effective number was 173. Among the 173 people, 91 were female and 82 were male, accounting for 14.5% of the Post-00 generation, 17.9% of the post-90 generation, 17.9% of the post-80 generation, 46.8% of the post-70 generation, and 2.9% of the others. The average standard error of sex was 0.038, the average standard error of age was 0.088, the standard deviation was 0.501 and 1.160, and the variance was 0.251 and 1.345, respectively. Organize the data into a three line table, as shown in Table 1:

Table 1. Background survey of questionnaire population

Spec		Amount	%
Gender	Male	82	47.4%
	Female	91	52.6%
Age	post-00	25	14.5%
	post-90	31	17.9%
	post-80	31	17.9%
	post-70	81	46.8%
	others	5	2.9%

a Data source "made by the author"

Table 2. Background survey of tourists' tendency

Travel frequently	Yes	68	39.3%
	No	105	60.7%
Willing to travel online	Yes	104	60.1%
	No	69	39.9%

a Data source "made by the author"

From Table 2, we can see the basic information of the population. At present, the population still has reservations about going out to travel. On the contrary, 60% of the people are willing to travel online. This is related to repeated epidemics and people's wait-and-see attitude towards long-distance travel. Specific key topics are analyzed as follows:

- Topic 1: Do you know about cloud Tourism

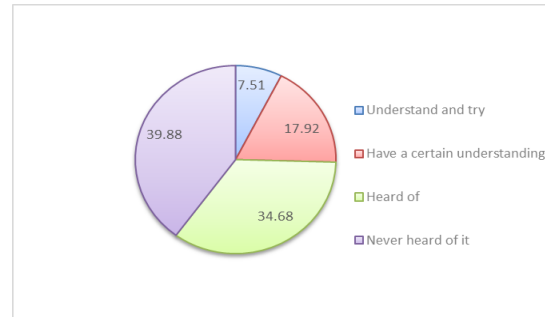


Figure 1 Do you know about cloud tourism.

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Figure 1 shows that the promotion of cloud tourism is insufficient. But from another perspective, cloud tourism has high potential to be developed.

Topic 2 is a question about technology we will not list it in the paper.

- Topic 3: What do you want cloud tourism to meet

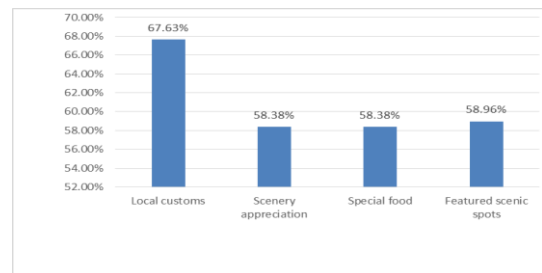


Figure 2 Cloud tourism demand.

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This topic is multi topic. As can be seen from the selection in Figure 2, these four options belong to the advantages of cloud tourism mode. We Media and live online celebrities can make efforts in these aspects. For example, in the consumption poverty alleviation activities in 2020 and 2021, the network anchors bring agricultural products of the poor areas to the market and promote tourism consumption packages. At the end of 2021, the live broadcast of meteor shower by tourism experts in Tibet is a relatively successful promotion case. The live show attract more people to become stargazers and visit Tibet to appreciate meteor shower in the plateau.

- Topic 4: What do you want your cloud travel mode to be

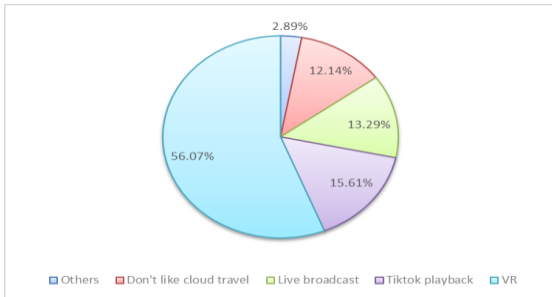


Figure 3 How you want your cloud travel will be.

a Data source "made by the author"

It can be seen from Figure 3 that 56.07% of the options have selected VR panoramic simulation. VR technology has now been applied to the education industry, such as simulated driving training and simulated flight. It is only a matter of time before we enter the tourism industry. The investment in science and technology may drive the development of cloud tourism.

- Topic 5: Why do you not participate in cloud tourism

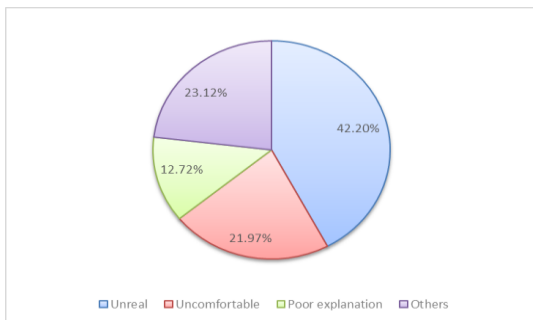


Figure 4 Why do you not participate in cloud tourism.

a Data source "made by the author"

From Figure 4, it can be seen that 42.2% of the participants had a low sense of participation, and the video was not realistic. 21.97% of the participants had an option that their eyes would ache after watching the video for a long time. With the upgrading of VR wearable devices, the problem of comfort will be solved.

- Topic 6: Compared with traditional tourism, what advantages of cloud tourism can attract you

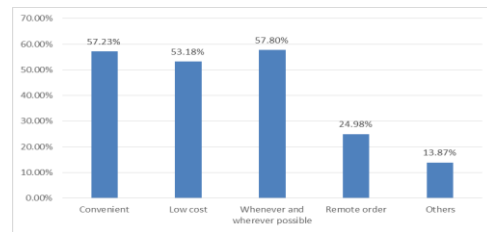


Figure 5 Advantages of cloud Tourism.

a Data source "made by the author"

This question is a multiple choice question. From Figure 5 of this topic, we can see that cloud tourism has its own advantages. For example, it is not affected by geographical location, and the tourism cost is low, because you can enjoy the beautiful scenery at home. When people keep social distance during the epidemic period, cloud tourism can not only promote the sales of tourism peripheral products (nearly 25% of the choices), but also help people maintain their physical and mental health.

- Topic 7: Compared with traditional tourism, what disadvantages of cloud tourism make you dissatisfied

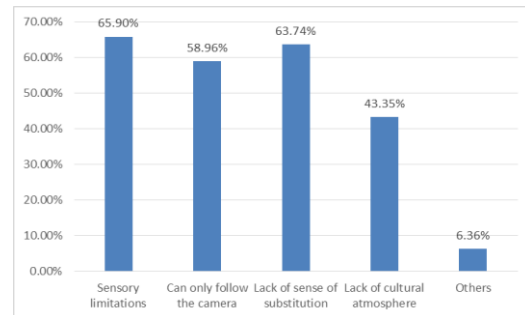


Figure 6 Disadvantages of cloud tourism make you dissatisfied.

a Data source "made by the author"

It can be seen from Figure 6 that the lack of freedom is one of the weaknesses of cloud tourism. Therefore, the development of VR wearable technology in the future should take into account the requirements of consumers' senses.

Table 3. Scale type

Topic \ option	very agree	agree	not necessarily	disagree	very disagree
Network platform should vigorously develop cloud Tourism	48(27.75%)	60(34.68%)	44(25.43%)	14(8.09%)	7(4.05%)
Cloud tourism should be highly integrated with science and technology to increase the sense of interaction	55(31.79%)	69(39.88%)	31(17.92%)	10(5.78%)	8(4.62%)
Would you like to tell the experience of cloud tourism in person on the network platform	32(18.5%)	58(33.53%)	52(30.06%)	18(10.4%)	13(7.51%)
Are you willing to promote cloud tourism to people around you	36(20.81%)	60(34.68%)	58(33.53%)	11(6.36%)	8(4.62%)
Cloud tourism has great development space	40(23.12%)	66(38.15%)	50(28.9%)	9(5.2%)	8(4.62%)

a Data source "made by the author"

• Topic 8: Scale type

The reliability of Table 3 is analyzed by SPSS, and the result is that the coefficient of Cronbach is 0.878, between 0.8 and 0.9. According to the definition, the reliability of this question is very good. However, since there is only one question, it is not possible to rotate this solution. However, it can be seen from the chart that people have a strong desire to highly integrate science and technology with cloud tourism, and highly agree with the idea of promoting cloud tourism and increasing efforts to develop cloud tourism.

Question 10 is an open question, asking participants what kind of tourism they are willing to participate in when the meta universe and cloud tourism are highly integrated. The answer shows that most of the participants are willing to participate in cloud tourism. It can be seen that most of the participants are very optimistic about the future development of the meta universe + tourism model.

To sum up, this questionnaire is first-hand data. From the descriptive analysis, people hold a positive attitude towards the development of cloud tourism driven by science and technology, and the development of cloud tourism is expected.

4.2 Analysis and Conclusion of Linear Regression Model

In this paper, the single linear regression model is used to explore the factors affecting tourism income. The unitary model can be expressed as: $y = \beta_0 + \beta_1 x + \varepsilon$.

Table 4. China's online transaction scale and total tourism revenue from 2008 to 2021

Year	Total domestic tourism revenue / Billion	Domestic online transaction scale / Billion
2008	874.9	48.64
2009	950	61.76
2010	1570	94.89
2011	1930.5	131.39
2012	2270.6	170.86
2013	2627.6	218.03
2014	3031.2	316.66
2015	3419.5	432.63
2016	3939.0	577.9
2017	4556.1	742.6
2018	5127.8	875.
2019	5725.1	1086.65
2020	2228.6	638.6
2021	2920	1642.71

a Data source: Official Website of the Ministry of Culture and Tourism

From the data in Table 4, we can see the data of online transaction scale in China from 2008 to 2021. Due to the limited statistical quantity of online tourism business data, we have only collected 14 years of data through the official website of the National Bureau of statistics, the Ministry of Culture and Tourism, and iResearch consulting and ECOSOC. In order to prove that "cloud tourism" can promote the development of tourism, I chose online tourism transaction scale as the data to try to analyze the relationship between online transaction scale and tourism revenue.

4.2.1 Model Settings

The autor organized the collected data according to Table 4 and imported the data into Eviews and draw the trend chart and fitting chart with the command of pol.

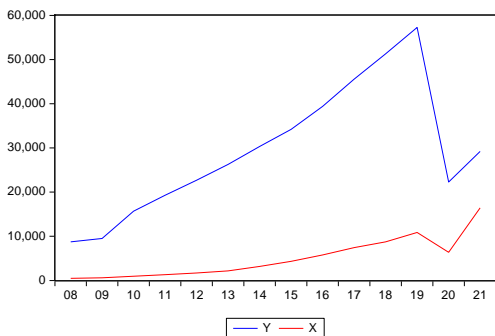


Figure 7 online transaction scale and tourism revenue trend(by 100 million).

a Data source: Official Website of the Ministry of Culture and Tourism

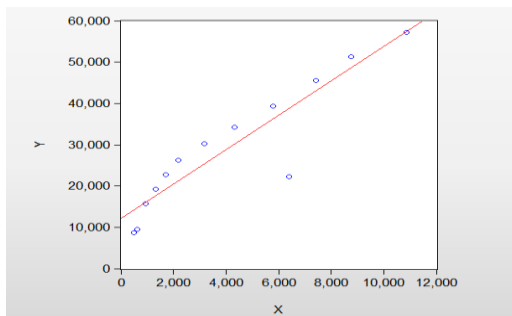


Figure 8 online transaction scale and tourism revenue.

a Data source: Official Website of the Ministry of Culture and Tourism

From Figure 7 and Figure 8, it can be seen that the domestic tourism revenue is basically positively correlated with the domestic online tourism transaction scale, and it is linear. Therefore, we can start to assume variables.

4.2.2 Hypothetical Variables

The total domestic tourism revenue (trillion) is set as the explanatory variable y, the domestic online tourism market is set as the explanatory variable x, and the model is set as: $y = \beta_0 + \beta_1 x + \varepsilon$

Using Eviews software to take the least two multiplication and OLS regression method to estimate the data, $y = 18992.23 + 2.07117x$ can be obtained. Due to the epidemic situation, the data in 2020 and 2021 are affected by noise. The fitting degree of the above models is not too high. For the sake of experimental preciseness, the above models are assumed to be exponential function model, logarithmic model, double logarithmic model and quadratic model, and Eviews is used to estimate them, and the test and correction results are obtained. Four figures can be obtained after inputting the command. Among them, the quadratic model and the double logarithm model fit well.

Table 5. Double logarithmic function model:

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.505249	0.589740	11.03070	0.0000
LOG(X)	0.453356	0.072674	6.238187	0.0000
R-squared	0.764313	Mean dependent var		10.15237
Adjusted R-squared	0.744672	S.D. dependent var		0.572871
S.E. of regression	0.289472	Akaike info criterion		0.490044
Sum squared resid	1.005525	Schwarz criterion		0.581338
Log likelihood	-1.430308	Hannan-Quinn criter.		0.481593
F-statistic	38.91498	Durbin-Watson stat		0.621339
Prob(F-statistic)	0.000043			

a Data source "made by the author" by Eview.

Table 6. Quadratic function model

Dependent Variable: Y				
Method: Least Squares				
Date: 08/02/22 Time: 23:43				
Sample: 2008 2021				
Included observations: 14				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7310.633	3820.245	1.913656	0.0820
X	7.878851	1.323228	5.954264	0.0001
X^2	-0.000387	8.35E-05	-4.636497	0.0007
R-squared	0.803742	Mean dependent var	29407.79	
Adjusted R-squared	0.768059	S.D. dependent var	14823.10	
S.E. of regression	7138.849	Akaike info criterion	20.77190	
Sum squared resid	5.61E+08	Schwarz criterion	20.90884	
Log likelihood	-142.4033	Hannan-Quinn criter.	20.75922	
F-statistic	22.52433	Durbin-Watson stat	2.164361	
Prob(F-statistic)	0.000129			

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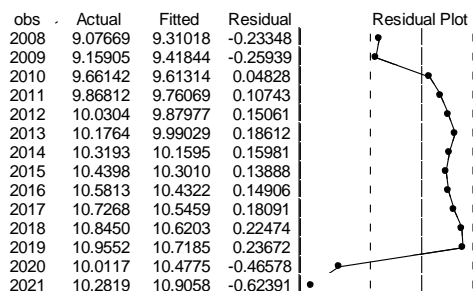


Figure 9 Residual of double logarithm function.

a Data source "made by the author" by Eview

Model comparison: it can be seen from Figure 9 and Figure 10 that the scale of the residual of the double logarithmic function falling in the dotted line box is larger, and when the model focuses on factor analysis, it should pay more attention to t value, so the double logarithmic function model is more suitable. The expression can be obtained: $\log(y) = 6.605249 + 0.453356x$, that is, x increases by 100 million, and $\log(y)$ increases by 45.3356 million. Therefore, there is a positive correlation between the transaction scale of online tourism and tourism revenue. It proves that cloud tourism can drive the development of tourism.

5. CONCLUSION

To promote cloud tourism and promote the development of outbound tourism in the Belt and Road countries, we suggest to start with technical support, demonstration effect and consumption stimulation.

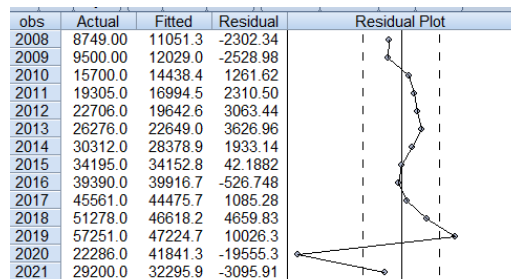


Figure 10 Quadratic function residual.

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Technical support: The local government can promote "multi code integration", mutual recognition of nucleic acid test results with friendly countries, mutual recognition of health codes, uploading and certification of self-test results, etc., to facilitate tourists' travel. Cooperate with the Belt and Road countries to develop local 5G communication networks, set more advanced real-time maps using the Beidou Satellite System, and use machine translation software to automatically do bilingual translation for APPs to make up for the language barriers of tourists and guides, and improve service efficiency and quality. The intelligent algorithm is used to match merchants and tourists, the public service of the tourist destination realizes online panoramic service, realizes the interaction between the digital consumption scene and the physical consumption scene of the destination, and provides hardware support for cloud tourism.

Demonstration effect: it is suggested to take Indonesia as an example of outbound tourism

cooperation among the Belt and Road countries. Indonesia has a short flight distance from China, and direct flights between the two countries have been operating effectively for many years. Indonesia's local tourism service facilities also have sufficient experience in receiving Chinese tourists. Indonesia is a cooperative country of China Indonesia community, and the business departments of the two countries have rich cooperation experience. It can be used as a bridge to communicate with local tourism practitioners to promote Indonesia's outbound cloud tourism model. If the epidemic situation is stable, you can try to pass through the customs quickly with a tourist visa.

Consumption stimulation: local tourism bureaus cooperate with tourism agencies in China to promote market entities to increase their business. They cooperate with cultural and tourism enterprises to launch products such as consumption coupons, discount promotions and electronic package tickets for travel routes on major social media platforms, so as to promote scenic spots, accommodation and other enterprises to improve the efficiency of customer service. Local governments in China can stimulate tourists' desire to travel abroad by issuing government consumption coupons, which can include full reduction of digital RMB and preferential fares. Inbound countries can attract tourists by exempting tourists from consumption tax, accommodation consumption coupons, landing transportation link subsidies, and electronic package tickets for tourist attractions.

Strengthening international cooperation among the Belt and Road countries will help accelerate the recovery of tourism. The digital economy will promote the rapid development of tourism in the future.

AUTHORS' CONTRIBUTIONS

Qin Guan was responsible for experimental design, manuscript, revising and editing. Yuntao Hu analysed data.

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