Analysis of Factors Affecting the Revenue of Star-rated Hotels in China under the Background of the Epidemic

Haozhe Sun

Xi'an Jiaotong University, Xi'an, Shaanxi, 710049, China

Abstract: The sudden outbreak of the epidemic has left us unprepared, and major industries have been hit hard, especially the service industry with the characteristics of non-storage, intangibility and in - person consumption, among which the tourism and hotel industry is affected by the epidemic It is quite significant, so the analysis of its influencing factors is also of great significance. In this report, we will describe our thinking, method and process of studying the factors that affect the revenue of star-rated hotels in the context of the epidemic. Finally, we will analyze and explain the essential phenomenon or reasons reflected in the data research results.

Keywords: Hotel industry; Hotel revenue; Epidemic situation; Factor analysis

1. Introduction

At the beginning of 2020, the outbreak of the epidemic, which was the Spring Festival period when people's consumption was the most prosperous, suddenly turned into a stagnation of consumption, which brought unavoid--able losses to people and the country in all aspects. The most affected is the service industry, and in the service industry, the most affected by the epidemic is the tourism industry. Because of the serious human-to-human transmission in this epidemic, the national government has put forward policies such as city closure, isolation, and prohibition of gatherings in order to protect people's lives. Isolate at home, try to avoid going out, go online to visit relatives and friends, there is an online platform for meetings and classes, sports can be done at home, vegetables can be delivered to your door, shopping and games can all be done online, but only traveling What can't be done online, of course, you can watch the beautiful scenery and enjoy the wonders online, but no matter what you do online, there are many novel online travel plans and activities, but they can't make people experience the joy of offline travel. The necessary expense for people traveling is accommodation. The hotel industry is an important economic component of the tourism industry and an indispensable part of the national economic development. The importance of the tourism hotel industry to the national economy is self-evident.

After the epidemic is over, as the government still has stricter control measures on gatherings of people, most large-scale gatherings such as conferences, exhibitions, performances, learning and training are still postponed or cancelled, and are instead conducted online. Large-scale groups of customers stay in hotels Demand still needs to gradually recover with the lifting of epidemic restrictions, and a certain buffer period is still needed for full recovery; tourists with ordinary consumption demand mostly choose suburban tourism or rural tourism, and the demand for accommodation has not rebounded significantly; business conference organizers also Try to hold the agenda online or shorten it as much as possible. Due to regulations such as health QR codes for the movement of people, and 14-day quarantine observation for cross-regional migrants in most units, the scale and frequency of people's movements are still relatively small, and consumers also try to compress the itinerary and scope of movement. Reduce travel risks. The "psychological burden" and shadow that the epidemic has caused consumers to be wary of the external environment and crowds still requires a certain recovery period. Except for people who are just in need such as meetings, the release of other tourists' accommodation needs still requires a process. Therefore, this paper decided to study the main factors and changes affecting the hotel industry's revenue before and after the epidemic, and at the same time, through the analysis of the data analysis results to explore the phenomenon or the nature of the reasons behind the data.

2. Data acquisition and analysis

2.1. Data acquisition

Data such as the number of hotels, hotel star distribution, hotel revenue, and average room rates in various regions of the country from 2018 to the first quarter of 2021 were obtained from the Chinese government website. Through the China Scenic Spot Network, we obtained the number of 45A-level scenic spots and all A-level scenic spots in various regions of the country from 2018 to 2021, and calculated the total number of A-level scenic spots from 2018 to 2021. The number of four or five A-level scenic spots in the region accounts for the proportion of all A-level scenic spots in the region. With the help of the National Bureau of Statistics, the data of per capita GDP and per capita disposable income of 31 provinces, municipalities and autonomous regions (excluding Hong Kong, Macao and Taiwan) from 2018 to 2020 were found. These two dimensions perform K-means++ clustering on 31 provinces and cities, and divide the 31 provinces and cities into 4 categories.

2.2. Variable selection

Considering the relevant literature read and the dimensions of the data collected, and in order to better explain the dependent variable hotel revenue amount, we finally determined the following eight independent variables: the total number of hotels in each region, the proportion of 4/5 star hotels , the proportion of 4A/5A scenic spots, the category of provinces and cities, the average price of hotel housing in each region, the proportion of catering income, the average housing occupancy rate and the proportion of room revenue. Our next data analysis work will be based on the independent variables and dependent variables selected here.

2.3. Data preprocessing

2.3.1. Division of time series

The collected data from the first quarter of 2018 to 2021 are divided into three stages, namely before the epidemic (2018-2019), during the epidemic (the first quarter of 2020 - the second quarter of 2020) and the recovery period after the epidemic (2020) Q4-Q1 2021).

2.3.2. Data Standardization

Before performing multiple regression analysis, we found that the dimensions of the data of the independent variable and the dependent variable were not the same. In view of this, we finally selected the Z-Score normalization method to standardize the data with different dimensions, and obtained the dimension-removed data is obtained, and further data analysis work is carried out based on this data.

2.4. Data Analysis

After selecting the variables and standardizing the data, we conducted a preliminary multiple linear regression analysis on the data of different time periods through SPSS. As a result, we found that after all the 8 independent variables we selected were introduced into the regression equation, there would be a serious multicollinearity problem, and many independent variables could not pass the t-test at all, which means that a considerable number of variables have been affected in different periods. The effect of the dependent variable hotel operating income is not significant. In view of this, we decided to choose stepwise regression to perform regression analysis on this data.

Using SPSS software, we carried out stepwise regression for these 8 independent variables in different periods. First, we performed a gradual regression on the data before the epidemic, leaving only four independent variables: the number of hotels, the average room rate, the proportion of room revenue, and the proportion of four- and five-star hotels. Moreover, these variables all passed the t test, and the variance inflation factors were all less than 10.

Next, we conducted a regression analysis on the data during the epidemic. During the epidemic, the variables selected by the multiple regression have changed compared with those before the epidemic. They are: the number of hotels, the proportion of room revenue, the category of the province and the average room price. These variables also all pass the t-test, and the variance inflation factor is much less than 10.

Finally, for the recovery period after the epidemic, the main influencing variables during the epidemic

recovery period are: province category, number of hotels, and the proportion of four- and five-star hotels. These variables still all pass the t-test, and the variance inflation factor is less than 10.

3. Summary analysis

3.1. Analysis before the epidemic

Through the results of multiple regression (gradual regression), it can be seen that when the tourism industry was not affected by the new crown epidemic before the epidemic, the factors affecting the operating income of star-rated hotels in various regions are: the number of hotels x_1, the average room rate x_2, the proportion of room revenue x_3, the four Five-star ratio x_4.

The regression equation is: $y = 0.510x_1 + 0.824x_2 - 0.248x_3 - 0.153x_4$

Interpretation is as follows: Regarding the influence of the number of hotels and the x_1 average x_2 room price, the more hotels in the region and the higher the average room price, the more star-rated hotels in the region will naturally have more operating income, which is easier to understand. The two factors, the proportion and the proportion x_3 of four or five x_4 stars, interpret the negative factors of the operating income of regional star hotels.

The proportion of room revenue (negative correlation): The proportion of room revenue in a certain region is interpreted as: the performance of the prosperity level of the hotel industry in that region. The higher the proportion of room revenue in the revenue of star-rated hotels, the higher the profit model of the hotel. Yes, he mainly realizes the hotel's profit through the rental of rooms, and there are almost no other forms of profit; and for hotels with a low proportion of room revenue, it shows that this type of hotel has a variety of profit methods, and the hotel can provide more services for profit. For example, for chain hotels such as Home Inn and Hanting, such hotels can only make profits by providing accommodation services; while for four- and five-star hotels such as Hilton and Wanda, in addition to room revenue, they also make profits. With other services brought by a series of services such as gym, catering, conference hosting, business reception, etc., its low proportion of room revenue means that it has a variety of profit methods, and further it can make more profits.

Proportion of four or five-star hotels (negative correlation): When interpreting this negative influence factor, we first need to know the profit composition of four- and five-star hotels, which are mainly composed of direct profits and indirect profits. :

Direct profit: Five-star hotel investment is very large, the average single-room investment ranges from 100,000 to 700,000, and due to the high level of service, staff wages are also a very large cost, and it is generally considered that four or five-star investment returns the cycle is more than 20 years. Obviously, the profit margin of five-star hotels is low and the return cycle is slow; of course, some five-star hotels in a few first- and second-tier cities will be higher than the same industry.

Indirect profit: The main investment purpose of many five-star hotels is to provide commercial facilities for the surrounding areas, and to improve their industrial value through commercial facilities. And the value of this part of the industry is far from the economic benefits generated by the hotel rooms themselves. Especially hotels with a background of real estate developers, such as Wanda, Country Garden, etc. In addition, the investors who join the star-rated hotels are partly also to improve the commercial value. Although the franchise needs to pay a certain cost, the economic benefits of the commercial stores and residential areas increased by the star-rated hotel as a supporting facility are far from the operating profits generated by the hotel itself. Finally, in order to stimulate the economy and attract investment, some areas may recruit star-rated hotels into the area. The government may have certain preferential policies in terms of taxation or certain aspects for welcoming star-rated hotels. In this way, costs can be saved for star-rated hotels and the profits of the hotels can be improved. Therefore, the direct profits of five-star hotels are relatively low. The main source of profits of most five-star hotels is to increase the value of shops and residences by doing business facilities, and indirectly create profits.

In the pie chart of the proportion of star-rated hotels in China, we can see that three-star hotels account for the main part. Through data inquiry, we learned that due to the huge upfront investment and personnel costs of four- and five-star hotels, the direct profits of four- and five-star hotels are far lower than that of three-star hotels; In other words, the higher the proportion of four or five-star hotels, the lower the profitability of star-rated hotels.

3.2. Analysis in the Epidemic

Through the results of multiple regression (gradual regression), it can be seen that when the tourism industry is affected by the new crown epidemic during the epidemic, the factors affecting the operating income of star-rated hotels in various regions are: the number of hotels x_1, regional categories x_2, the proportion of room revenue x_3, and the average room price x_4.

The regression equation is: $y = 0.615x_1 - 0.232x_2 - 0.216x_3 + 0.279x_4 + 0.749$

Interpretation is as follows: I x_1 will no longer interpret the influence of the number of hotels. Now I will interpret x_2、the negative factors of the operating income of regional star-rated hotels by two factors: the proportion of hotel room revenue and the proportion x_3 of four or five- star hotels. x_4

(City) Category (negative): The category is based on the GDP and per capita income of each province and municipality. The 32 municipalities with identity are clustered and rated, and they are divided into four categories 1, 2, 3, and 4. The smaller the number, the more the more developed the area is.

Now let's interpret why the regional category has become a negative impact factor in the outbreak? We know that during the outbreak of the epidemic in the second quarter of 2020, suspected confirmed cases in China need to be quarantined in hotels, and many foreign residents who return to China also need hotel quarantine. On the one hand, in a more developed area, the flow of people in the area will be very large, and the number of people who may be infected and sick in the area will also be very large, so a large number of people have been quarantined. On the other hand, not all routes have international flights. According to the survey data of our group, in general, the more developed cities have more international flight routes. According to Chinese policy for those who were intentionally diagnosed at that time, they need to be quarantined in the hotel for 14 days. Therefore, for the more developed cities, the flow rate of personnel is high, and there will be more international routes. A large number of domestic and overseas returnees are quarantined in hotels, which increases the operating income of star-rated hotels in these areas. For regions with relatively backward development, there are relatively few people returning to China and quarantined from abroad, and the operating income of their hotels is also very low.

3.3. Analysis of epidemic recovery

Through the results of multiple regression (gradual regression), it can be seen that when the tourism industry is in the recovery stage after the epidemic, the factors affecting the operating income of star-rated hotels in various regions are: hotel category x_1, number x_2 of hotels, and the proportion of four- and five-star hotels x_3.

The regression equation is: $y = -0.398x_1 + 0.615x_2 + 0.295x_4 + 1.283$

Interpretation is as follows: Why is the proportion of four- and five-star hotels a negative factor before the epidemic and a positive factor after the epidemic?

Reasons for the proportion of four or five stars (positive correlation):

1) The epidemic has greatly increased people's acceptance of four- and five-star hotels, and the number of four- and five-star consumers has greatly increased. Due to the fact that people's outbound travel could not be realized during the epidemic, after the epidemic recovered, people had a revenge consumption mentality, and people were more willing to increase their spending on travel.

2) After the epidemic, three-star and below-star hotels were affected far more than four- and five-star hotels. Due to the huge losses suffered during the epidemic, they had to increase their income by raising prices. The pricing of four- and five-star hotels remains basically unchanged, which also makes many consumers willing to spend a little more money to experience the better services provided by four- and five-star hotels and obtain a better travel and accommodation experience.

From this, it is found that the development trend of four- and five-star hotels has undergone silent changes. In the future, the development of four- and five-star hotels may have more user groups, and their direct revenue from room operations will also increase substantially. The development of five-star hotels will have good prospects in the future.

References

[1] Yao Yonghong, Liu Yun, Li Jingjing. Performance evaluation of listed companies in the hotel and tourism industry—based on the 2018 cross-sectional data model [J]. National Circulation Economy, 2020(23): 120-122.

[2] Yin Meiqun, Tao Lei. Research on the performance evaluation of listed tourism companies—taking CYTS as an example [J]. Finance and Accounting Communications, 2011(27): 106-109.

[3] Pu Jiao, Qi Zhipeng, Fang Kaikai. Analysis of the cost structure and cost control strategy of economy hotels—Taking 7-day chain economy hotels as an example [J]. Heilongjiang Science and Technology Information, 2015(31): 297.

[4] Wen Bo. Research on the performance evaluation of tourism hotel listed companies based on factor analysis [J]. Enterprise Reform and Management, 2015(12): 189.

[5] Li Shaohua. Research on star hotel efficiency and internal and external influencing factors based on DEA [D]. Dongbei University of Finance and Economics, 2019.

[6] Deng Jiaqi. Research on Cost Management of H Hotel under Activity-Based Costing [D]. Henan University of Science and Technology, 2019.

[7] Su Rong. Problems and countermeasures of catering cost control in small and medium-sized hotels: Taking Southeast International Hotel as an example [J]. Accounting Research, 2018(08): 50-54.