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Airbnb Rental Listing Database for the Case of Barcelona

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Airbnb;Barcelona;Rental listing;Price influence factor

Abstract

With the accelerated process of economic globalization and liberalization, more and more people start to participate in the sharing economy life. The sharing economy uses modern technologies such as the Internet to optimize and redistribute resources and reduce resource waste, which is a reflection of the continuous development of social productivity. Airbnb, as one of the most popular travel products under the background of sharing economy, has grown into a Internet giant worth tens of billions of dollars from a small enterprise in the past 12 years.

This paper takes Airbnb Shared accommodation platform as the research object, analyzes Airbnb's rental list database in Barcelona, and studies the main factors influencing pricing. A comprehensive solution to the problem of systematic link between price and the attributes of the provided products, so as to fully analyze the influence of Shared product attributes on its pricing, so as to achieve a more reasonable rental price record. In this paper, 13 indicators representing general characteristics, amenities, management functions, quantity and quality, and landlord characteristic factors in the lease list are selected for research. The model for analysis of Barcelona established this time has a strong explanatory ability and a good effect. Finally, it is proved that the general characteristics in the rental list, room type has a positive impact on the rental price, and various properties related to the accommodation area have a positive impact on the airbnb rental price in Barcelona. Location has a negative impact on airbnb rental prices in Barcelona. Amenities have a positive impact on airbnb rental price in Barcelona, along with facilities. The number of information content of accommodation room has a positive impact on the price. However, the number of comments has a negative impact on airbnb rental price in Barcelona, but the effect is not so great. Availability of instant booking was associated with a drop in airbnb rental price in Barcelona. The professionalism of the landlord is also linked to the rise in airbnb rental price in Barcelona. In the airbnb rental listing of Barcelona, higher customer ratings are associated with higher prices, although the competitive advantage gained from higher ratings is more important, given the advantages of higher ratings. In some cities, being a super-landlord affects rental prices, as it does in cities like Barcelona. At the same time, in the rental list, the amount of information content of the housing is very important, because the landlord who publishes more information content of the housing will charge higher rent, because the amount of information content of more housing may indicate the landlord's higher professional level. Therefore, for those landlords, it is necessary to improve the overall customer rating score and increase the landlord's professionalism to raise the price and obtain greater benefits.

Catalogue

1 Introduction

1.1 Background of the topic

Sharing economy refers to a new economic model in which individuals, enterprises or other economic individuals, based on the purpose of obtaining economic benefits, with the help of the Internet platform, trade related goods and services, and transfer the right to use goods for a certain period of time.The essence of sharing economy is to adopt the economic behavior such as rental to take the place of the purchase. Through the separation of the right to use goods and ownership, to allocate the right to use idle resources such as idle goods, accommodation, etc.The purpose of sharing economy is to improve the utilization rate of idle resources, so as to promote the reasonable maximization of profits.

The shared economy is an innovation based on the O2O model.When more traffic flows into the shared platform, the platform shows not only the unilateral network externality, but also the characteristics of its network external interaction.As a shared platform for the global accommodation industry Airbnb, more than 3 million passengers had been served by the end of 2019. For a short time, Airbnb has already received $1 billion in financing in 2015, and its platform is now worth more than 10 billion, surpassing the world-

famous Hyatt Regency.

At present, a lot of work has been done on the research of shared accommodation from concept, operation mode, development process to social impact, etc. It has become a comprehensive interdisciplinary subject. The Shared accommodation industry has begun to take shape, with business innovations constantly emerging. The overall industry is staying st a rapid rise stage, and leading enterprises are emerging. Therefore, the research and analysis of airbnb's rental listing is a good guide to the study of the sharing economy.

1.2 Significance of the topic

At the academic level, the current weak performance of the global economy, especially this year's epidemic has caused a huge impact on the world economy, in this case, the sharing economy has become an important economic model to improve the utilization of resources under the situation, then the sharing platform should be based on the criteria for pricing, which is now a question to be widely explored. Airbnb, as a platform of sharing economy, especially a representative of the emerging accommodation sharing industry, needs to be supported by enough supply side and consumption side at the same time, which is a very typical research object.

In the market, the most direct way of enterprise competition is price competition. According to the theory of price, every enterprise must have an "optimal price", which includes the following meaning: there must be a price that can create the maximum profit; if the price differents from the "optimal price" a lot, any wrong price adjustment will lead to bad result; overpricing and underpricing can also have negative consequences.In a practical sense, pricing and revenue management have been regarded as the two most frequently studied topics in hotel marketing (Yoo，Lee and Bai,2011). Due to different hotels have different geographical positions, target markets, customer needs and service standards guest rooms, hotel room pricing process may be more complex than traditional industrial products and general services pricing. The determination of the room rates of many hotels is temporary. They passively follow the market price, unable to actively according to market demand, supply and competition, the hotel's business goals and financial goals in advance to decide an optimal price.

This paper takes Airbnb shared accommodation platform as the research object, and analyzes Airbnb's rental listing database in Barcelona, and studies the main factors influencing pricing. It will be helpful to comprehensively analyze the influence of shared product attributes on its pricing, so as to achieve a more reasonable rental price making.

2 Literature review and theoretical basis

2.1 Literature summary

The Web of Science citation database obtains more than 8,700 core academic journals in 170 disciplines, and has become an important database for obtaining global academic information due to its authority and influence. This paper took WOS as the data source, searched the theme and title in WOS with keywords such as "sharing economy", "short-term rental", "airbnb", "Barcelona" and "rental listing", and analyzed and identified them through literature reading. As the research on shared home stay belongs to the interdisciplinary field, the above keywords may not be enough to guarantee the completeness of the retrieval results. This paper supplemented the literature in the following ways: First, carefully read the retrieval literature, and extendthe retrieval of the references of the reading literature to discover new relevant literature; Second, through the analysis of the sources of literature retrieval journals, it is found that these journals are mainly tourism hospitality industry journals, such as Tourism Management , International Journal of Hospitality Management, etc. Reading and searching related journals will help to further understand this field; Third, based on literature retrieval, the author's papers published in recent years can be judged whether they are related to the study of shared homestay by reading the title, key words and abstract. In this paper, those above methods are used to ensure that more than 50 references with referential significance for this study can be retrieved.

Through further analysis of the relationship between the research context and the research topic, it is found that the research literature in North America mainly used the quantitative regression method to analyze the influence of Shared homestayers on the hotel business performance, the influence of Airbnb platform design mechanism on the performance of Shared homestayers, and the influence of consumers' participation motivation. Articles in Europe focus on the study of the distribution characteristics of shared homestay in tourist cities, the impact on residents' communities and the consumption experience. The research methods are mainly geographical data analysis and statistical analysis. Chinese and south Korean scholars in east Asia focus on exploring factors that influence the participation of tourists in shared accommodation, such as the cultural value and trust mechanism.

Many scholars have focused on the motivation of consumers to participate in the sharing of home stays. Utilitarian value and hedonic value are the basic reasons for consumers to buy goods/services (Voss and Grohmann, 2003), the utilitarian value of a product/service lies in providing basic functions and functions to consumers. Utilitarian value is related to efficiency, task and economic factors, while hedonic value is the uniqueness of the product/service or the consumer emotion aroused by it, such as pleasure, experience and stimulation. It is an important topic of consumer behavior research to explore the utilitarian value and

hedonic value of products/services in various consumption scenarios. In the hotel tourism marketing, current scholars pay more attention to the hedonistic/utilitarian consumption motivation of consumers in the shared home stay situation (Lee and Kim, 2018).

In the tourism market, accommodation price is an important factor affecting customer decision and hotel profit, and pricing has always been one of the core issues in tourism market research (Yoo, Lee and Bai, 2011). Many scholars have studied the influencing factors and pricing strategies of hotel pricing from the demand side and the supply side.Traditional hotels have developed a mature pricing strategy, while Shared accommodation landlords are confused about how to price due to their lack of understanding of the real market value. It is estimated that Airbnb hosts receive 46% less in additional revenue because of underpricing. Due to the differences in features and service diversity of home stay facilities, many scholars have explored the pricing research of Shared home stay facilities.

Some studies analyzed the factors that influence the pricing of shared accommodation. Wang and Nicolau (2017) analyzed the shared accommodation in 33 cities around the world on Airbnb and revealed the factors that form the price of shared accommodation in five categories: landlord characteristics, website and house characteristics, facilities and service attributes, rental rules and online word-of-mouth pricing. Using the method of geographical weighting, Zhang, Chen and Han (2017) found that the distance between hared accommodation and downtown in Nashville, Tennessee, USA, had a negative effect on the price, and this effect was more obvious in urban areas than in remote areas. Some scholars also used the pricing model to analyze the influencing factors of home stay prices. Chen and Xie (2017) used the hedonic pricing model to estimate the consumer value of Austin home stay facilities in the United States, and found that four factors (the functional characteristics of home stay facilities, the characteristics of landlords, the reputation of home stay facilities and industry competition) would affect the price of shared home stay. Gibbs et al. (2017) used the feature price model to analyze the shared homestay in five cities in Canada, and the conclusion showed that the general features, management features, facilities, comment quality and quantity, and landlord characteristics had an impact on the price. In terms of landlord pricing strategies, Benitez-Aurioles analyzed the reason why the more flexible the home stay accommodation booking policy is, the lower the home stay accommodation price will be from the perspective of supply and demand.

Guest experience is an important aspect of airbnb accommodation research. Currently, many academic articles have carried out exploratory and quantitative research on the characteristics, willingness, motivation and satisfaction of home stay guests. Wang (2015) analyzed those online reviews of China's famous tourist destination Lijiang ancient town, sorted out the factors of successful home stay operations and summarized

seven key points, including home atmosphere, room facilities, other facilities, service, cleanliness, location and cost performance. After the questionnaire survey, Wang found that cost performance and family atmosphere were the most concerned factors for Chinese residents there. Pricing is also an important part of short-term rental platforms research. Chris Gibbsa (2018) et al. studied the influence of various variables on the prices of Airbnb listings published in five metropolitan areas in Canada, and the results showed that physical characteristics, location, and host characteristics can significantly influence the prices.

2.2 Research overview

All in all, it can be seen that many scholars have conducted a large number of studies on online short-term rental platforms and related influencing factors, among which there are many places for learning and reference. In the domestic and foreign scholars' research on the sharing economy and online short rent, it can be seen that both the online short rent industry and airbnb are in the exploratory stage of growth and have not yet reached the maturity stage, so the research on it is not yet saturated. Most of the current articles focus on the overall overview of the industry, while there is little research on specific areas (e.g. Barcelona) and specific directions.

In addition, the current research methods of sharing homestay are mainly about empirical research. AAt present, relevant researches mainly focus on the influence effect of Shared homestay and the behavior analysis of participants, and the selection of research methods is mainly determined by the research questions. Regression analysis is mainly used for problems such as the influence effect of Shared home stay and landlord participation behavior. The data analysis is based on the second-hand data obtained from the Shared home stay platform and the regional socio-economic statistics. These data are mainly sectional data and lack of long-term tracking research on the problem. To share a home stay facility to study the influence factors and the use of motivation mainly through the analysis of the structure equation based on the questionnaire survey, the current research focuses on Shared home stay facility early consumer participation behavior research, such as satisfaction, motivation and behavioral intention, about sharing a home stay facility supplier participation motivation.There are few researches on the motivation and influencing factors of the participating behavior of the supplier of shared homestay.

3 Research ideas and methods

3.1 Data sources

Airbnb's data sharing platform *http://insideairbnb.com* website provides analyzed, cleansed and aggregated data to the public. Where detailed listings data and review data of Barcelona could be acquired.The study intercepted 21,116 pieces of data from *http://insideairbnb.com/barcelona* before March

15th, 2020. After EXCEL sorting and filtering, useful datas are left for analysis.

3.2 Research ideas

In the research of shared homestay, scholars focus on quantitative research in the application of methods. In the data analysis method, regression analysis and structural equation model are used most frequently, while simple statistical and factor analysis methods are used in a small number of studies.

First of all, this study will analyze airbnb's rental price in Barcelona based on multiple linear regression model and find out these factors that influence the pricing. Study their correlation, try to find the universal rule, then make a general description of the airbnb rental listing in Barcelona. To make recommendations for its future development in this region.

3.3 Research methodology

3.3.1Brief introduction of multiple linear regression analysis prediction

Any economic activity is not isolated, and the related elements are not a single, and often some obvious influence elements and many uncertain factors,therefore, one dependent variable and some arguments are dependencies. It is difficult to distinguish the main sequence of several factors, and it is possible to choose which factor is to be removed, that is, the argument is greatly influenced by the factor, and the problem becomes complicated. It is necessary to adopt the multiple regression analysis method because the result of the prediction by the one dimensional linear regression analysis is almost invalid, and there is a possibility that the misread leads.

A prediction model is constructed by correlation analysis of two dependent variables from two or more arguments. If there is a linear relation between the dependent variable and the argument, which is called multiple regression analysis.

3.3.2 Computational model of multiple linear regression

Let y be the dependent variable, that is, the explained variable is $x_{.1}, x_{.2}, \ldots x_i$. The multivariate regression model is:

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \ldots + \beta_i x_i + u \quad (i=1,2,\ldots, n)$$

Among them ,$\beta_0, \beta_1, \beta_2, \ldots, \beta_i$ a constant term, a regression coefficient, and a u amount of interference. When one dependent variable y x only to two independent variables$_1 x_{,2}$The linear correlation can be described by binary regression, which is:

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + u$$

The dependent variables in the economic field are often related to multiple independent variables. When establishing the multivariate linear regression model in the economic field, the proper choice of explanatory variables can keep the regression model with excellent explanatory ability and prediction effect. The appropriate selection criteria for explanatory variables are as follows:

The arguments should have significant effects on the dependent variables, and relatively strong linear correlations;

The linear correlation between the argument and the dependent variable is not formal and must be true;

The argument should be independent of one another; the degree of correlation between the arguments must be higher than the degree of correlation between the argument and the dependent variable;

The argument should have complete statistical data, and the predicted value can be easily determined.

In the case of binomial linear regression model, the set of standard equations for regression parameters is obtained:

$$\begin{cases} \sum y = n\beta_0 + +\beta_1 \sum x_1 + \beta_2 \sum x_2 \\ \sum x_1 y = \beta_0 \sum x_1 + \beta_1 \sum x_1^2 + \beta_2 \sum x_1 x_2 \\ \sum x_1 y = \beta_0 \sum x_1 + \beta_1 \sum x_1^2 + \beta_2 \sum x_1 x_2 \end{cases}$$

solution equations, that is, the value of the obtained regression coefficients. $\beta_0, \beta_1, \beta_2$

3.3.3 Test of Multiple Linear Regression Model

The multivariate linear regression model is the same as the univariate linear regression model. It also needs to be tested and evaluated to determine if the model can be applied, rather than pseudo correlation, leading to prediction errors.

■   Determination of fitting degree

Can definitely coefficient R^2 and monadic linear regression, multiple linear regression in R^2 also have multiple r-squared figures, it is a total change in the dependent variable, the regression equation the explanation of the changes, the greater the value of R^2, the regression equation of sample sites, the higher the degree of fitting all the more closely the relationship between the dependent and independent variables with).

The value of R^2 in multiple regression is a necessary condition, not a necessary and sufficient condition, for the degree of correlation between all independent variables and dependent variables. A large R^2 value can only indicate that at least one independent variable has a high degree of correlation with the dependent variable, but it cannot indicate that each independent variable has a high degree of correlation with the dependent variable. There is a problem with using only the R^2 measure, even though this variable may have a very small effect on the dependent variable, but R^2 does not decrease. Because the new variable reduces the degree of freedom. Therefore, in the redundant regression, the adjusted R^2 is generally denoted as $\overline{R}^2$ as the standard to measure the degree of correlation. The calculation formula is:

$$\overline{R}^2 = 1 - \frac{RS/(n-k-1)}{TS/(n-1)} = 1 - (1-R^2)\frac{n-1}{n-k-1}$$

When the effect of model fitting degree changes little due to the addition of variables, that is, when the increase of R^2 is extremely limited, $\overline{R}^2$ may decrease. In this way it is possible to avoid to some extent the error of adding variables with weak effects to the model.

■   Estimated standard error

The estimation standard error is the standard error between the estimated value $\hat{y}$ obtained by the regression equation and the actual value of the dependent variable Y . The smaller the estimation standard error is, the stronger the fitting degree of the regression equation will be.

$$S_y = \sqrt{\frac{\sum(y - \hat{y})^2}{n - k - 1}}$$

Here, k means the number of independent variables in the multiple linear regression equation.

■ The significance test of regression equation

To verify the importance of regression equation, that is, the importance of the whole regression equation, or to evaluate whether the linear relationship between all variables and variables is close, generally F test is carried out, and the calculation formula of F universal measurement is :

$$F = \frac{R^2 / k}{(1 - R^2)/(n - k - 1)}$$

According to the given significance level a and the degree of freedom (k, n-k-1), check the F distribution table,then get the corresponding critical value. If F> F_a , it is proved that the regression equation has significant significance and shows the significant regression effect.

■ The significance test of regression coefficient

In univariate linear regression, the importance check of regression coefficient (t-check) and the importance check of regression equation (f-check) are equivalent, but in multivariate linear regression, the equivalence is not true.The t test verifies whether the regression coefficients in the regression model are significant, so that the factors that have significant influence on the dependent variables can be retained.So when in the test, first need to calculate the statistic t_i, then calculate according to the significant level a and (n-k-1).

4 Analysis of the Rental Price of Abiying in Barcelona Based on Multiple Linear Regression

4.1 Model setting

This paper is to study the quantitative relationship between the rental price of accommodation in Barcelona and the related attribute factors of accommodation. We set the model to:

$$Y = \beta_0 + \beta_1 X_1 + + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \cdots \beta_i X_i + u$$

Among them, the dependent variable is Y： Barcelona accommodation rental price

The selection of independent variables is shown in the following table:

Table 4-1 Choice of Factors Affecting the Price of Airbnb Accommodation in Barcelona

Level I indicators		II indicators
General	X1	Room type (whether independent

characteristics		housing a)
	X 2	Capacity (number of people that can be accommodated)
	X 3	Number of bedrooms
	X 4	Number of bathrooms
	X 5	Position
	X 6	Free parking
Facilities	X 7	Fitness, swimming facilities available
Management functions	X 8	Instant bookable a
	X9	Room informations
Check quantity and quality	X10	Number of reviews
	X11	Total score
Landlord characteristics	X12	Professional Landlord (with 2 or more listings)
	X13	Superhost status

Note: a represents a binary variable (yes =1). "Instant booking" means that a guest can make a quick reservation before the host agrees. In the rental listing database provided by airbnb, each specific facility of each house is included. In this study, we only chosed two typical facilities (swimming pools and fitness facilities) for analysis. The title "super landlord" is the honor given to certain landlords, who usually have high ratings and high efficiency of response. If the landlord has two or more active lists, he is designated as a professional landlord.

Based on the data availability of Airbnb's lease list in Barcelona, this paper selects 5 level I indicators as well as 13 level II indicators as shown in Table 4-1.

Among the above analysis factors, some landlord's relevant characteristic data are added, because in the management aspect of the whole Airbnb experience, it is necessary to have certain experience and input to obtain higher house price. throughout the lease list, the pricing of the lease is the most embodiment of the value of the house, and is also the most concerned Airbnb the landlord as well as the platform. therefore, price is chosen as the dependent variable of the study. At the same time, study what will have an impact on the lease price in the lease list, so as to study the value of this list in detail, find out the most important factors that affect the price in the lease list, can provide a basis for better pricing and achieving maximum benefit.

4.2 Statistical Analysis of Factors Affecting Airbnb Rental Listing in Barcelona

In this analysis, a total of 21,116 pieces of data were obtained from the official website of airbnb. Default data were deleted and selected based on EXCEL, and 15,610 pieces of data were finally obtained. Then, multiple regression analysis was conducted based on SDATA.

Table 4-2 Analysis of Impact Factors of Airbnb Accommodation Rental Price in Barcelona

	N	Minimum	Maximum value	Average	Standard deviation
Rental price	15610	9	15000	129.09	416.507
Room type (independent housing or not)	15610	0	1	0.46	0.499
Capacity	15610	1	20	3.41	2.261
Number of bedrooms	15610	0	15	1.56	1.003
Number of bathrooms	15610	0	15	1.329	0.6467
Position score	15610	2	10	9.62	0.771
Whether free parking	15610	0	1	0.438	0.521
Fitness, swimming facilities available	15610	0	1	0.261	0.423
Whether instant bookable	15610	0	1	0.597	0.492
Whether can get housing content information	15610	0	1	0.621	1.372
Number of comments	15610	1	729	48.54	71.615
Customer review score	15610	20	100	90.98	10.180
Professional Landlord (with 2 or more listings)	15610	0	1	0.383	1.027
Whether a super landlord	15610	0	1	0.221	0.414

Descriptive statistics for each variable are presented in Table 4-2, from which some features that are very obvious in the airbnb rental listing can be seen. Prices vary considerably in Barcelona's rental list, with a large standard deviation of 416.507. In the room type, only 46.0% of the housing supply is for

independent housing. Similarly, it can be seen from the standard deviation that there is a big difference in the number of comments, the total customer score, which proves that in the overall rental listing, there is still a big difference in the satisfaction of rented rooms, Similarly, the average total review score is 90.98, which proves that the overall housing quality of the airbnb is relatively high, and with the improvement of its overall quality, its later rating will be higher and higher. Finally, it can be seen from Table 4-2 that the overall proportion of landlord professional is considered to be 38.3%, indicating that the overall level of landlords needs to be improved. There are a little quantity of superhosts, only 22.1%.

4.3 Empirical Analysis on the Influencing Factors of Airbnb Rental Listing in Barcelona

First, correlation analysis was conducted with SPSS22.0.Results are shown in table 4-3:

Table 4-3 Correlation Analysis of Factors Affecting Airbnb Accommodation rental prices in Barcelona

	Composition				
	1	2	3	4	5
Rental price	1				
Room type (independent housing or not)	0. 691				
Capacity	0. 752				
Number of bedrooms	0. 729				
Number of bathrooms	0. 759				
Position score	0. 795				
Whether free parking		0. 787			
Fitness, swimming facilities available		0. 834			
Whether instant bookable			0.725		
Whether can get housing content information			0.798		
Number of comments				0.764	
Customer review score				0.776	
Professional Landlord (with 2 or more listings)					0.731
Whether a super landlord					0.702

From the correlation matrix diagram in Table 4-3, we can see that the correlation between each of the 13 independent variables and the dependent variables is relatively high, and all of them have passed the significance test, so we can use this variable to do regression analysis, which is in line with the actual situation, then we can do multivariate linear regression.

The parameters of the model are estimated as well as tested below to obtain the data in Table 4-4.

Table 4-4

		Model summary		
Model	R	R^2	Adjustment R^2	Errors in standard

				estimates
1	0.762 a.	0.652	0.703	404.369

a. forecast variable: rental price

Goodness of fit test: from Table 4-4, we can see that $R^2 = 0.703$, indicating that the fitting effect of the model is relatively good.

Table 4-5

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Model		Square sum	df	Equivalent	F	Sig.
1	Regression	170700592.452	18	9483366.247	57.997	b 000
	Residual	2527435007.055	15457	163513.942		
	Total	2698135599.507	15475			

a. dependent variable: price

b. predictive variables :(constant), room type (whether it is a standalone housing a), capacity (number of people that can be accommodated), number of bedrooms, number of bathrooms, location, free parking, fitness, swimming facilities, whether can get housing content information,instant bookable a, number of comments, customer review score, professional landlords (with 2 or more relevant inventory information), whether a super landlord a.

Significance test of the regression model: using the distribution test, following the distribution of degrees of freedom, when the original hypothesis is rejected, that is, the regression equation is significant at the horizontal level. F $H_0 : \beta_1 = \beta_2 = \cdots = \beta_p = 0$ F $(p, n-p-1)$ F $F > F_\alpha(p, n-p-1)$ H_0 α

(F(1,15610)=57.997, p F(1,15610)=0.001, indicating that the regression equation was significant at a significant level of 0.05, that is, the 13 variables had a significant effect on the rental price.

Regression analysis was performed to obtain the analysis results in Table 4-6 below.

Table 4-6 Multiple Regression Analysis Results

	Model	Standard coefficient		t	Sig.	B 95.0% confidence interval	
		B	Standard error			Lower limit	Upper ceiling
1	(constant)	-108.707	52.015	-2.090	0.037	-210.662	-6.752
	Room type	46.801	9.084	5.152	0.000	28.995	64.608
	Capacity	16.397	3.533	4.641	0.000	9.471	23.322
	Number of bedrooms	18.029	6.221	2.898	0.004	5.836	30.223
	Number of bathrooms	30.035	6.509	4.615	0.000	17.277	42.792
	Position score	6.553	5.239	-1.251	0.001	-16.822	3.717
	Whether free parking	2.831	5.097	0.555	0.579	-7.160	12.822
	Fitness, swimming facilities available	9.321	0.092	-7.964	0.000	-.913	-0.552
	Instant bookable	25.482	7.410	8.837	0.000	50.957	80.007

Whether can get housing content information	7.734	3.451	-2.241	0.025	-14.499	-0.970
Number of comments	-0.293	0.048	-6.060	0.000	-0.388	-0.198
Customer review score	32.219	0.706	0.311	0.006	-1.163	1.602
Professional landlords(at least 2 business information)	22.413	0.187	12.880	0.000	2.046	2.781
Whether a super landlord	37.791	8.588	6.845	0.000	41.956	75.625

As shown in table 4-4, it can be seen that the adjusted R^2 value indicates that the model established for Barcelona analysis explains 70.3% of the Airbnb listing price change, as well as the percentage change of the rental price related to the discovery of statistically significant attributes. In assessing the impact of the variable on the relevant variables after logarithm conversion, the coefficients must be converted into $(e\beta-1)$, of which the coefficient of account is made, and e represents the base of the natural logarithm. For example, if the coefficient is 0.25, it means that this attribute results in a 25% increase in the price of Airbnb [exp (0.25) -1].

Based on the analysis in table 4-6 above, according to the general characteristics reflected in the rental lisingt, the housing price is greatly influenced by room type, and the rental price of private housing is higher than that of other housing types such as Shared housing. If the housing type is private housing, the rental price will increase by 46.801%. At the same time, it can be seen from the above table that various attributes related to accommodation area (capacity, number of bedrooms and number of bathrooms) have a significant positive impact on the rental price of airbnb in Barcelona. The increase in the capacity of passengers and the rise in prices showed a positive correlation. The number of bedrooms also has a big impact on prices, as each additional bedroom increases the price by 18.029 per cent. Bathrooms have an even greater impact on rental prices, with each additional bathroom adding 30.035% to the price. Finally, in the airbnb rental price in Barcelona, due to the different focus Angle of customers on location, this paper chooses to use location score to evaluate the quality of its location. The percentage increase listed in table 4-6 indicates that the better the location is, the higher the rental price will be, and the overall impact is 6.5538%.

In this paper, swimming pool and gym are selected as the influencing factors of facilities. The increase of these two facilities leads to a large increase in housing price. The existence of fitness facilities and swimming pool facilities will lead to a 9.321% increase in rental prices. The availability of free parking had little positive impact on rental prices, with only 2.831%.

The customer pays attention to the immediateness of the reservation, so the price of the room that can be booked immediately will increase by about 25% compared with the room that cannot be booked

immediately. Time is money, which is well demonstrated in this example. Similarly, customers are also concerned about the content of houses on the airbnb platform. Generally speaking, the more detailed the information and the richer the photos, the more comfortable the customers will feel. The impact of housing content on prices was 7.734 %.

It is important to note that one of the negatively correlated variables among these factors is the number of comments. One negative comment can even ruin the good image that ten positive comments have built up. The number of reviews had a negative effect on airbnb's rental prices in Barcelona, but the effect was mercifully small. In contrast, customer ratings had a significant positive impact on airbnb's rental prices in Barcelona, with each additional point in the overall score leading to a price increase of 32.219%. This shows the importance of public praise.

The quality of the landlord is also very important for the management of houses. Better landlord could attract more customers. The professionalism of landlords is closely related to the increase of rental prices, with a rate of 22.413%. If the owner has the title of super landlord, the rental price will increase by 37.791%.

5 Summary and outlook

5.1 Summary

Based on the research object of Airbnb shared accommodation platform, this paper analyzes the database of Airbnb's lease list in Barcelona, and studies the main factors affecting pricing. a comprehensive solution to the problem of systematically linking the price with the attributes of the product provided, so as to comprehensively analyze the impact of the shared product attributes on its pricing, so as to achieve a more reasonable formulation of the rental price measurement. In this paper ,13 indicators representing general characteristics, facilities, management functions, viewing quantity and quality, and landlord characteristic factors in the lease list are selected for study.The model developed for Barcelona analysis has a strong explanatory, the effect of the model is better.The final conclusions are as follows:

(1) By summarizing the characteristics of this rental listing in Baecelona, it is not difficult to find that the price of the house source is the most affected by the room type. The price of private house is higher than that of other types. if it is private housing, the price of rent will increase by 46.801%. Various facilities inside the house have an important impact on the price. For example, the setting of bathrooms and bedrooms, as well as auxiliary settings such as swimming pools, fitness facilities and parking spaces, could increase the rental price of the house. This shows that in the rental process in Barcelona area, people generally pay more attention to the setting of hardware facilities.

Compared with software facilities, hardware facilities are more concerned by customers and are the

core of the experience of homestay. Different from traditional hotels, in a metropolis like Barcelona, home stay guests pay more attention to the environmental atmosphere. Different from the ordinary tourist places, the residents of metropolises have certain requirements for the commercial supporting services around the accommodation.

Therefore, operators in this area can try to improve the experience of residents by standardizing the management of facilities and cleaness, and try to increase the types of facilities to give residents a better experience of accommodation and enhance their competitiveness.

(2) Due to the information asymmetry and non-contact in the online consumption market, it is difficult for customers to evaluate the quality of products/services, therefore, online reputation becomes the reference information when customers make purchase decisions.Hotel tourism is an experience-type commodity whose quality is difficult to be evaluated before consumption, Internet word of mouth in hotel tourism industry has a greater impact on consumers' decision-making. Many studies show that the online public praise has a significant impact on customers' consumption intention and hotel performance. With the characteristics of online transaction and non-professional operation, visitors will rely more on online comments and reviews to judge their service quality.

The overall score of the website and the details of the housing information have a great impact on the rental price in Barcelona. The price will increase by 32.219% for each additional point of total review score. It shows that the price of shared accommodation is not the only factor that influences consumers. Part of the reason for choosing shared accommodation is to feel the social experience that nowadays young people attach great importance to. The display content of the house can reflect the existence value and credibility of the house, the more detailed and specific the content is, consumers will be more inclined to the house. The total score can be used as the direct indicator to judge the attractiveness and quality of the housing, and is an important factor of whether make a housing reservation.

(3) The landlord's professionalism is closely related to the rental price. The more experienced and highly rated the landlord is, the higher the housing price will be. Table 4-2 shows that only 38.3% of all customers think that the landlord is professional, and the number of super landlords only achieved 22.1%. Obviously, as an international city famous for tourism, this figure will be nothing like enough . There is space to improve the professionalism of landlords in the Barcelona area. Through instant and patient communication with guests and exquisite room decoration, the operators of home stay activities in this area can leave good service attitude and sense of home atmosphere for the guests, so as to improve the overall experience of the guests. The operators of homestay in this area can impress the customers with their good

service attitude and enhance the overall experience of the guests with the atmosphere of home, then leaving them a deep impression.

5.2 Prospect

The research and analysis of Aipiying's leasing inventory database in Barcelona. is based on multiple regression analysis, this paper selects 13 indicators representing general characteristics, facilities, management functions, viewing quantity and quality, landlord characteristic factors in the lease list to study, and the final results prove the rationality of the model. This model proposed in this paper can help airbnb landlords to take measures and formulate corresponding strategies for customers in this area. It can also find out the deficiencies and improve user experience in relevant aspects so as to achieve better sharing. On the other hand, it provides data support for consumers to make travel plans in advance, and is committed to enabling more consumers to choose satisfactory shared accommodation, so as to make travel more convenient. However, for this model, the accuracy of the model needs to be based on a large amount of data, in the empirical analysis, the larger the data sequence often obtained, the more accurate the whole model. But the amount of data is too large, which will lead to the increase of computation, thus increasing the uncertainty of the model. The data selected in this paper, whether the quantity is moderate or not, need further verification. At the same time, Airbnb's rent-list database in Barcelona can only reflect regional characteristics, but Airbnb's lease situation in Barcelona is affected by many factors, such as national policy, political environment and so on. The global outbreak of pneumonia in early 2020 has had an impact on the Spanish government, as well as on the whole tourism industury and so on. It's to reflect these effects in simple data modeling. Therefore, how to select more comprehensive indicators to establish the pricing model of Airbnb leasing needs more in-depth and meticulous research.

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