The Hedonic Model of Hotel Prices in Shanghai: An in-depth Exploration of the Clustering Factors of Traffic Proximity

Xue Yang*

International Business School Suzhou, Xi'an Jiaotong-Liverpool University, Suzhou 215123, Jiangsu, China

*Author to whom correspondence should be addressed.

Abstract: This study aims to explore the multiple influences on the price formation of hotels near Shanghai airports, using multiple linear regression and hedonic pricing models to analyze the relevant data. As an international financial center and China's largest city, the hotel industry in Shanghai has formed a unique value system around the airport, which is not only affected by infrastructure and accessibility, but also significantly influenced by intrinsic characteristics such as service quality and customer evaluation. This paper reveals the recovery and growth of the hotel business after the epidemic, especially the formation mechanism of hotel prices near transport hubs. The findings show that there is a positive correlation between hotel star rating, customer rating, and price, while the distance of the hotel from the nearest bus stop has a significant positive effect on price, which implies that consumers' evaluation of service quality and convenience plays a key role in hotel price decisions. In addition, the clustering effect of geographic location and proximity to transport hubs also has a significant impact on hotel prices. The hedonic pricing model proposed in this study provides new perspectives for decision makers to develop pricing strategies, emphasizing the impact of consumer preferences and market segmentation on the hotel business. At the same time, this paper also points out the limitations of the current study, such as the timeframe of data collection and the possible omission of key explanatory variables, and future research can further validate these preliminary findings through more extensive data collection and more sophisticated modelling. Overall, this paper provides valuable insights into understanding hotel prices in Shanghai and similar cities, and offers theoretical support and practical guidelines for hotel management, pricing strategies, and market planning. It also provides a rationale for investors when selecting hotels for investment.

Keywords: Hedonic pricing model; Shanghai hotel price; Regression analysis

1. Introduction

1.1. Background

As China's largest financial center and the number one city in terms of GDP in 2023, Shanghai is even more valuable and can serve as a model for other cities to follow.

An analysis of the passenger throughput data for Shanghai airports shows a fluctuating but steady growth trend. From 28,890,000 passengers in 2013 to 82,789,500 passengers in 2022, the throughput has experienced a process of growth followed by decline. After experiencing the epidemic, in early 2023, the passenger flow of Shanghai Pudong Airport and Hongqiao Airport fully recovered to the level of the same period in 2019, and the daily passenger flow peaked at more than 340,000 passengers. From January to September 2023, Shanghai Airports achieved an operating income of 7.921 billion yuan, an increase of 91.81% year-on-year, and achieved a net profit of 497 million yuan, an increase of 123.63% year-on-year.

It is not difficult to see that since the epidemic, Shanghai's airside economy has not only restored its original prosperity, but also become more prosperous due to the opening up after the end of the epidemic.

Meanwhile, this trend is in line with the Shanghai hotel industry, which leads the pack with a high level of RMB739.98 per room per night in 2023, a rate increase of around 70 per cent compared to other cities. Shanghai is the only region to exceed RMB 700 per night.

1.2. Research objectives

This paper discusses the strategic significance of Shanghai Airport in the regional hotel market. As one of the major international aviation hubs, it has made a profound contribution to defining the region's ephemeral economic landscape [1]. This attracts a wide variety of travelers and investors, ranging from the globe-trotting business class to the vibrant tourist community, each placing different demands on the hospitality industry, creating an ever-changing market challenge. This paper addresses this issue professionally in order to visualize the data and through a hedonic pricing approach [2].

This study argues that exploring hotel pricing in the vicinity of such an air transport hub requires a sophisticated understanding of spatial economics. The location attributes of a hotel — including accessibility, noise levels, visibility, and public infrastructure — have a significant impact on its hotel room prices [3]. Particularly within a 10-kilometer radius, these factors merge into a powerful valuation framework that reveals how geographic location to an airport can alter perceived value [4]. In addition, intrinsic and extrinsic hotel characteristics, such as star rating, age, room quality, and location, provide multidimensional characterization data for hedonic pricing models. These feature analysis help to further change the service offerings of hotels and, by extension, their market positioning and pricing strategies [5]. This multidimensional feature separation analysis helps hotel stakeholders — investors, operators, and policy makers — to dissect the premiums that can be attributed to various features and tailor responses to changing market dynamics [6].

Overall, they have resulted in increased GDP growth and economic revenues for Shanghai through the economic multiplier effect. Through a well-planned business environment and open markets, Shanghai has become an important transport hub, tourist city, and economic center. Well-planned transport routes facilitate tourists visiting Shanghai. As a result, the tourism and hospitality industries have flourished. And one of the main factors for the booming tourism industry in Shanghai is the provision of diverse, vibrant, and competitive room services. Therefore, it is necessary to identify consumers' preferences for different services and amenities, including location-specific amenities, and their willingness to pay for these amenities and services. Among location-specific

amenities, distance to tourist attractions and transport hubs is particularly important [7].

1.3. Research model

The hedonic pricing model is particularly used in feature economics and property valuation as a versatile and multi-dimensional tool for quantifying the value of features and is able to demonstrate the multi-dimensional nature of property prices with intuitive data. A wide range of locations and intrinsic characteristics are utilized in the context of a hotel near Shanghai Airport. When considering hotels within a ten-kilometer radius of this bustling international transport hub, hedonic pricing analysis provides rich insights into the subtle interplay between price determinants and hotel characteristic values [8].

The hedonic pricing model can be used not only as an evaluator of the valuation of heterogeneous hotel characteristics, but also extends its application to hotel price analysis. By capturing and analyzing historical and current data, analysts can predict hotel price trends for different airports within the same clustered group of distance of each other, thus facilitating strategic planning and investment decisions [9]. As Shanghai Airport continues to grow and evolve, its impact on nearby hotel cluster head prices is expected to be an ongoing area of academic and commercial research.

The prevailing view is that the interaction between cluster factors and hotel prices is a very interesting and subtle theme in the field of hotel economics and hotel management. The presence of hotels themselves in geographic clusters leads to competitive dynamics in which location-based attributes drive price differences. Clustering effects are viewed as the aggregation of economies of scale, which leads to operational efficiencies and potential cost reductions [10]. Conversely, increased demand in the same area due to concentrated economies can also generate a premium in hotel prices, which is referred to as the "hotspot effect."

There is evidence that hotels cluster in areas of high demand, such as tourist attractions or business centers. In this paper, more consideration is given to the point of transport hubs, being that hotels can command higher prices due to their perceived value in terms of convenience and accessibility. The clustering effect not only includes transport geographic proximity, but also extends to related value product appreciation, such as star ratings or unique experiences, further influencing the rate structure.

This multifaceted and multidimensional relationship underpins the strategic positioning and pricing policies of hotels, which wish to capitalize on the dual forces of clustering to gain a competitive advantage, while proactively responding to the challenges of saturated markets and price wars. Therefore, this study will focus on the impact of hedonic pricing models on hotel prices based on different clustering factors of the distance between different transport stations in Shanghai. Finally, the author tries to provide an intellectual phenomenon of the dual relationship between hotel prices and transport facilities based on the heterogeneous effects between different stations against the urban construction of Shanghai.

2. Literature review

2.1. Theoretical framework

The word "Hedonic" is derived from the Greek word meaning happiness index. As such, the term is often thought of as "paying an extra price for one's happiness." The model was first proposed by Rosen in 1974 and uses the hedonic coefficient to understand the marginal consumption of customers who pay for goodwill and community facilities [8]. The theoretical study of the hedonic price approach aims to examine the relationship between the characteristics of a good or service and its price. According to Rosen (1974), the hedonic model involves

identifying the characteristics of a heterogeneous good (e.g., a tourist hotel product) and judiciously analyzing the impact of these characteristics on the demand for the good [11]. Therefore, the hedonic pricing model is one of the best models to measure the relative value of property from an economic perspective. It is the main model for the valuation of environmental services.

The widespread use of the hedonic pricing framework is not surprising because it can include several attributes of a product or service provided by multiple actors with the aim of satisfying the needs of customers [12]. Not only that, the hedonic price function provides managers with information about the consumer's consumption psychology, which they can use in their pricing and investment strategy decisions to maximize the hotel's benefits [13]. Since managers are not only trying to maximize short-term revenues, but also trying to create a niche of loyal customers, the information from these data should be interpreted as providing opportunities for regression analysis.

2.2. Review of relevant studies

Hedonic pricing models are often used to analyze hedonic prices because product prices are influenced by the characteristics of the product output. The hedonic pricing approach has many applications in economics, ranging from the real estate market, hospitality, and tourism to the study of industries, environmental issues, etc. It is not surprising that the hedonic pricing model is widely used because it can include several attributes of a product or service offered by a large number of participants, analyzing the needs of customers in a diverse way [14].

Mandic's findings reveal the link between unique environmental and location-specific attributes and hotel prices [15]. Many heterogeneous and precious characteristic attributes determine hotel room rates [16]. These characteristic attributes include not only room quality, but also shared hotel facility services, service quality, and use of amenities other than the hotel itself. Using a hedonic price function model, this paper reports estimated implied prices for hotel room attributes in Shanghai. According to the data reported on the official website, actual transaction volatility prices are regressed on objective attributes and consumer perceptions.

In addition, the spatial correlation of hedonic prices is another frequently discussed issue. Scholars construct spatial econometric models by integrating spatial matrices into hedonic pricing models [17]. When constructing a hedonic pricing model, it is important to consider the external spatiality of the internal features as well as the internal coordination of the external features. In addition, the location of the hotel has a profound effect on tourism activity, considering that most tourists want to be within walking distance of the main attractions and often choose hotels that are close to them [18–19]. However, only a few hedonic pricing studies have utilized this model in the tourism sector to study the spatial characteristics and spatial variation of hotel room attributes [20]. Today, however, the geographical location of a hotel seems to be the most important, generally confirmed and accepted external hotel price determinant. The geographic location of hotel units is a known key influencer of tourism demand and therefore of accommodation prices [21]. As there is a clear geographic correlation in room rates, this paper will investigate the impact of clustering factors and airport distance on hotel room rates from the perspective of geographic correlation [22].

With reference to previous analysis in related articles, geographically differentiated markets may have quite different property prices because demand can vary significantly (consumers in different regions have different consumption preferences) and because the supply of hotels tends to be inelastic (i.e., it takes time to build hotels or convert other types of properties) [23]. Results from previous articles suggest that locational characteristics are more important relative to intrinsic characteristics. The Ozsoy study found that proximity to the city center and proximity to a metro station significantly increased home values. In addition, Newell and Seabrook emphasize the physical

characteristics of the site as the most important factor for a superior location. In this paper, all hotels within ten kilometers of Shanghai Airport, i.e., all star-rated hotels, are selected with the aim of analyzing and observing the potential heterogeneous characteristics of hotels in the region of Shanghai in terms of price volatility trends.

In recent decades, technological updates and iterations have changed the market for hotel accommodation bookings [24]. Understanding the different influences on consumer user behavior is a key asset to support management decisions in the current big data world. As a result, hoteliers need to address all possible variables, including those beyond their control, in order to incorporate in-depth knowledge into their e-marketing strategies to thrive and stand out in a smaller, more interconnected world [25]. Suffice it to say that the Internet has become an important distribution channel for the hotel industry [26]. Unlike traditional hotel bookings through travel agents, online hotel bookings offer many benefits to consumers, such as access to more hotel features and information, a complete description of the hotel property and location, better rates, and no additional booking fees. Many hotels have noticed this trend and offer secure online booking systems.

Vásquez analyzed the hotel hedonic price volatility factors based on hypothetical data, which was studied in this study using official web-based real data. The previous online data was not clear and comprehensive enough, which made data collection difficult at that time. But today's advances in information technology have changed the operating system of the hotel industry, from traditional booking methods to online enquiry.

Today, almost all hotels integrate information technology into their overall web operations [27]. For example, hotels can hand over the booking process to a third party through their website or hotel booking apps, saving on labor costs while presenting the data more clearly. Reasonable rates displayed by the platform play a crucial role in increasing hotel guests' trust in the platform and their desire to make online bookings. This means that whether the price information listed on the platform matches the price set by the hotel is a consideration for guests in deciding whether to book or not. This also exemplifies how hotels utilize features to attract customers, and whether the heterogeneous features of the hotel presented by the platform can make customers willing to pay an additional premium is also explored in this study. Pricing is at the center of any marketing strategy, including the hotel industry's use of new online revenue models to incorporate technological developments [28]. From a consumer perspective, social media and online travel agents (OTA) have increased price transparency to an unbelievable level [28]. Today, travelers may visit online customer review platforms to assess the opinions of others before making a purchase, and may supplement their information by visiting the hotel website for additional information about the hotel's facilities and detailed photographs. In general, customers are more willing to pay a hotel price that meets their expectations. For example, customers' willingness to pay an additional premium for hotels that contribute to environmental protection suggests that customers are willing to pay an additional premium for hotel characteristics they care about [29].

Clustering factors are characteristics or variables used to group or categorize the research objects observed in a data set. The purpose of clustering is to divide the samples in the dataset into groups so that samples within the group are more similar and samples outside the group are less similar. The presence of substitutes makes hotel prices fluctuate. It means that the localized market affects the operation of the hotel. Hotels in the neighboring area (localized market) affect the pricing and location decisions, costs, revenues, and profitability of the hotel [7]. Thus, local competition might reduce room rates, while local quality spillovers might also increase room rates; both effects are largely confined to the immediate environment of the hotel. In addition, clustering (agglomeration) brings spillovers in the form of cost savings (through sharing intermediate inputs) or learning of know-how (knowledge spillovers), which can help hotels to increase efficiency and reduce costs, and to compete more effectively with each other [30]. In this paper, clusters of hotels near transportation at different distances are

considered as a whole, and separate regression analysis are done within each whole, and samples are compared between the wholes to analyze the heterogeneous characteristics of clusters at different distances.

Cluster economies, which are geographic concentrations of interconnected firms, suppliers, and providers, enjoy certain economic advantages as a result of being geographically clustered in close proximity to each other. These economic advantages can be synergistic benefits, shared transport facilities, and supply spillovers. This geographic aggregation usually allows aggregators to enjoy economic competitive advantages and promotes shared economic growth within the group. It is also defined as a positive (or negative) externality due to the geographical aggregation of firms. These agglomerations are associated with geographic superiority between the economies of regions with locational advantages, thus generating competitive advantages. Three main positive externalities are associated with firm location: (1) knowledge spillovers; (2) expertise; and (3) availability of specialized inputs. Reading the literature on agglomeration economies in previous studies, it is easy to see that geographically superior clusters improve economic performance due to better production and/or demand, which in turn leads to the choice of agglomeration cluster economies in sectors such as technology, hospitality, food, and retail. In this study, agglomeration economies are important due to the apparent localization of hospitality services, which is considered inseparable in time and space [31]. Tourism markets are spatially or geographically concentrated in a specific place called a spatial cluster. Arguably, hotels located in the same spatial cluster have a uniform advantage in terms of both supply (access to suppliers and services) and demand (lower costs for consumers). In turn, agglomeration economies are associated with policy diffusion, leading to the formation of spatial clusters of hotels [32].

The hedonic pricing model is a method of estimating the economic value of goods by estimating their characteristics and then pricing them separately. When applied to real estate, for example, the model takes into account a variety of internal and external factors that influence the price of a property, including not only the characteristics of the building, but also the quality of the surrounding environment, community amenities, and the accessibility of various attractions or services. Essentially, the presence of business clusters can be a hedonic factor when pricing properties in or around the area. Because these types of economic clusters attract more commercial, social, and economic activity, they can increase the attractiveness of nearby hotels, which in turn can affect the price of those hotels. The interaction between cluster economies and hedonic pricing factors involves a mixture of microeconomic concepts related to how markets are geographically clustered together based on the characteristics of goods and types of services. In addition, a cluster economy's reputation for attracting investment and economic dynamism may add a "prestige factor" to the neighboring business community, which is often reflected in a premium for hotel or property prices within the cluster. This is somewhat analogous to the branding effect, where the mere association with a positive, dynamic, or prestigious entity (in this case, a cluster) can increase perceived value. This paper instead seeks to explore how to define geographically superior cluster economies and the impact of geographic superiority advantages on hotel hedonic prices, as well as attempting to explore the reasons for price fluctuations in different spatial clusters using hedonic pricing models.

In this paper, the authors consider the relationship between hotel prices and different transport stops using a clustering approach. Based on Ke's article, the authors summarize the clustering factors as: Distance factor, i.e., the distance of the sample to the nearest transport site is an important clustering factor [33]. This can be determined by measuring the distance from each hotel to the nearest metro station, bus stop, or other transport stop. Different modes of transport can be used as clustering factors [34].

Depending on what this paper attempts to study, hotel clusters can be divided into different traffic groups. In this study, there is only one main transport mode factor, and that is the airport. Secondly, there is the density of the transport network, which acts as a clustering factor within a certain area and has an impact on the room rates.

Finally, there is the combined transport factor, which considers multiple transport factors, such as whether the hotel is close to multiple modes of transport or whether it is located near a transport hub [35].

All of these clustering factors are features designed to better understand the relationship between them, dividing the sample into groups of similar factors. In research, the selection of clustering factors is usually based on the characteristics of the research problem and the data. However, it is important to note that while the existence of economic clusters can generally enhance the property economy, their dynamics can be complex and multidimensional. For example, if a cluster leads to traffic congestion, noise, or other negative externalities, these factors may counteract some of the locational advantages in the eyes of potential homebuyers, thus underscoring the subtle impact of clustering on the hedonic value of property.

This paper analyzes the impact of distance and traffic factors on cluster economics by examining hotel clusters with similar characteristics within a certain distance from an airport.

2.3. Summary

In summary, the relationship between the clustering effect and hedonic pricing factors is interdependent, where the clustering economy increases the value of hotels in its vicinity by increasing their desirability and utility, and the hedonic pricing model provides a model for quantifying and analyzing the premiums generated by this value-added in the real estate market. Existing literature highlights the importance of transport infrastructure to property values, particularly within a hedonic pricing framework [36]. However, there is limited research on the clustering effects of different transport sites and their differential impact on hotel prices. This study will build on the existing knowledge to investigate the differential impact of distance to different transport sites on hotel prices near Shanghai Airport.

Vega has shown that proximity to urban amenities, proximity to supermarkets, parks and plazas, metro stations, educational centers, and hospitals increases the value of a property or product [37]. Based on this hypothesis, this paper presents a detailed study and analysis.

Based on the literature review, the study formulates the following hypotheses.

H1: The hedonic pricing model will reveal a significant association between hotel prices and the distance of each transport station in Shanghai.

H2: Clustering patterns, such as the accessibility of multiple transport modes within close proximity, will lead to higher hotel prices

3. Methodology

3.1. Data collection

This study starts by collecting hotel data from Shanghai Airport and analyzing the feature data through a hedonic pricing model, which can yield many academic and practical benefits. In the academic field, hedonic pricing modelling is a recognized method of assessing the value of various goods and services by decomposing them into their constituent characteristics [8]. According to Brown, it is inappropriate to disregard how marginal attribute prices are generated from sample data. Therefore, one must impose a constraint that the structural parameters are the same across markets [38]. That is, this paper limits the market scope to a specific selected region.

3.1.1. Data source

Benefit transfer analysis: The data obtained from this model are useful in benefit transfer analysis, a technique

widely used in environmental economics to estimate the economic value of ecosystem services [39]. By applying this concept, one can infer the value of a particular location, such as external features or internal features, which are usually not considered in the value, but may be important for hotels near airports.

Pricing Strategies and Investment Decisions: The Hedonic model has been applied to various segments of the hospitality industry to aid pricing strategies and investment decisions [5]. Understanding the implied value implications of hotel characteristics can help hoteliers and stakeholders develop data-driven pricing and investment strategies for the hotel market near airports.

Market Segmentation: In academic discourse, hedonic modelling can visualize market segments and heterogeneous consumer preferences [40]. This can use data to differentiate and show how different customer segments (e.g., business travelers and leisure travelers) value different hotel attributes, which in turn affects the delivery of targeted services.

Urban and environmental policy implications: In addition, it is important that urban planners and environmental policy makers recognize the externalities associated with proximity to airports [41]. The data support policy measures that aim to promote transport accessibility while promoting positive aspects such as accessibility.

Benchmarking and quality standards: The methodology has further value for benchmarking quality standards and assisting hotel management in performance assessment [2]. This helps to enhance competitiveness by improving the quality of a particular property, thus increasing its hedonic prices and market competitiveness.

Dynamic market analysis: Finally, the collection of this data contributes to dynamic market analysis, enabling hotels to adapt to changing market conditions. As detailed in the academic literature, the adaptive aspect of the hedonic pricing model is crucial, especially in rapidly transforming areas where major transport hubs such as the Airport are growing [42].

In conclusion, the collection of data on hotels near Shanghai airports based on the hedonic pricing model provides a multidimensional and multi-faceted visualization of value assessment, enabling stakeholders to make informed, evidence-based decisions. This applies to price setting, investment appraisal, urban planning, policy making, and environmental management, each of which finds its basis in the empirical validity and theoretical robustness stipulated in the relevant academic literature.

3.1.2. Data collection procedures

The model in this paper focuses on a hedonic pricing model with hotel price as the dependent variable. The main benefit of using this model is that the model is able to isolate the individual contribution of each heterogeneous feature to the overall price [43]. This helps to provide a clear understanding of how proximity to an airport adds quantifiable and visualized value to a hotel property.

For hotels within a major international transport hub area such as Shanghai Airport, this involves examining a wide range of characteristic variables to capture the inherently heterogeneous attributes of the hotel and its surroundings. These variables include airport accessibility, availability of transport services, noise pollution levels, and proximity to associated commercial services and public facilities. Hotel price data was collected from relevant platforms and databases within ten kilometers of Shanghai Airport. The required data were collected from legitimate websites where the hotels were self-registered, and their relative usefulness was analyzed using different rating methods [44].

Detailed information was obtained on the distance between the hotel and various transport stops, including metro stations, bus stops, and major transport hubs.

3.1.3. Cluster analysis program

In this study, all 1235 hotels within ten kilometers of Shanghai Pudong as well as Hongqiao International Airport were collected, and the data were provided by the Ctrip website as well as Gaode map. Considering that the data provided by both websites is authentic and reliable, Python was used for data collection.

3.1.4. Determine the number of clusters

The variable settings are detailed in **Table 1**.

Variables include: information on hotels within 10km of Shanghai airport, including standard room rates, star rating, age of the hotel, business district it belongs to, number of bus stops, and in terms of distance, distance from the airport, and distance from the nearest bus stop.

Table 1. Variable selection

Variable	Unit (of measure)	Descriptions
Standard_Room_Rate_Within_1km	Numeric	Room rates for hotels within 1 km of Shanghai Airport
Standard_Room_Rate_Within_5km	Numeric	Room rates for hotels within 3 km of Shanghai Airport
Standard_Room_Rate_Within_10km	Numeric	Room rates for hotels within 5 km of Shanghai Airport
Hotel_Star_Level	Numeric	Star level rating of the hotel
Hotel_Age	Numeric	Number of years since the hotel was opened or extensively renovated
Business_Circle_Interaction	Numeric/Categorical	Presence within a major business circle area
Distance_From_Airport	Numeric	Distance in kilometers from Shanghai Airport
Distance_From_Bus_Stop	Numeric	Distance in kilometers from the nearest bus stop

A special explanation here is that the data was collected for the opening time, so the hotel's age is expressed as:

2024 - opening time = hotel age

2024 is the year in which the data was collected.

In this paper, the authors collect the latitude and longitude of the hotel first and calculate the related distance using GIS. The latitude and longitude-related data will be provided in the copy.

3.2. Cluster analysis

Implement clustering algorithms (e.g., k-means) to identify different groups of transport stops based on neighborhood patterns.

Explore the impact of different clusters on hotel prices.

3.2.1. Reasons for cluster analysis

This paper attempts to use SPSS statistical software to statistically and model fit the collected research data, to model the characteristic price of hotel rooms based on the market price of the clustering factors and the market price of stars at different airport distances, and to compare the degree of model fit of the three forms of the logarithmic, semi-logarithmic, and linear models to select the optimal model. According to Zhang's theory, some conclusions can be found and summarized: Based on the estimated results, the results expressed by the global model may not be accurate for a specific region. The fit coefficients of geographically weighted regressions indicate the importance of going beyond the global modelling framework when incorporating geographically

weighted regressions into hedonic price models. Therefore, in this paper, the optimal solution will be selected based on the data when choosing the methodology. The elasticity coefficients or semi-elasticity coefficients of the features are solved to explore the clustering factors of hotel room features with different implied prices.

3.3. Statistical analysis

In this paper, a multiple linear regression model is used to analyze the relationship between hotel price (Y) and hotel age (X1), star rating (X2), rating (X3), business area (X4), distance from the airport (X5), airport category (X6) and distance to the nearest bus stop (X7). The multiple linear regression model can be expressed as:

Where β_0 represents the intercept, β_2..... is the regression coefficient, and $\in$ is the error term.

Through regression analysis, the authors calculate the regression coefficient, standard error, *T*-value, and *P*-value of each variable. The coefficient represents the direction and degree to which the dependent variable is expected to change with the independent variable, and the *T*-value and corresponding *P*-value are used to test the significance of each variable.

As shown in **Table 2**, the descriptive statistics results of each variable are presented. The definitions of variables and the expected symbols in this study are listed in **Table 3**. The regression results are shown in **Table 4**.

Table 2. Descriptive statistics (N= 1148)

	N	Minimum	Maximum	Mean	Std. Deviation
Price	1105	28.0000	11889.0000	332.8860	555.4726
Hotel Age	1148	0	64.0000	6.5505	5.2355
Star Rating	1148	0	5.0000	2.4068	1.1115
Rating	1148	0	5.0000	4.2721	0.7351
Business District	1148	1.0000	2.0000	1.2927	0.4552
Distance to Airport	1148	0.2700	11.4000	6.0778	2.5096
Airport Category	1148	1.0000	2.0000	1.2927	0.4552
Nearest Bus Stop	1148	8.0000	901.0000	189.1620	133.4900

Table 3. Definition of variables

Variable	Definition	Expected sign
Y	Price	
X1	Hotel Age	−
X2	Star Rating	+
X3	Rating	+
X4	Business District	Hongqiao=1; Pudong=2
X5	Distance to Airport	−
X6	Airport Category	Hongqiao=1; Pudong=2
X7	Nearest Bus Stop	−

Table 4. Multiple linear regression

	Coefficients	Std. Error	*t* value	Pr(>)
(Intercept)	-106.190	110.827	-0.958	0.338
Hotel Age	-3.430	3.251	-1.055	0.292
Star Rating	35.075	16.260	2.157	0.031
Rating	82.617	25.659	3.220	0.001
Distance to Airport	-10.312	9.346	-1.103	0.270
Airport Category	1.944	52.116	0.037	0.970
Nearest Bus Stop	0.438	0.128	3.421	0.001

3.3.1. Regression

From the regression, it can be seen that there is a significant positive effect of hotel star rating on hotel price ($P=0.031$, B>0), the higher the star rating, the higher the price; there is a significant positive effect of rating on hotel price ($P=0.001$, B>0), the higher the rating, the higher the price; there is a significant positive effect of the nearest bus stop on hotel price ($P=0.001$, B>0), the nearest bus stop is farther away, the higher the hotel price. the further away, the higher the hotel price. The results of the collinearity test are shown in **Table 5**.

Table 5. Multicollinearity test

	VIF	Tolerance
Hotel Age	1.043	0.959
Star Rating	1.206	0.829
Rating	1.221	0.819
Distance to Airport	2.071	0.483
Airport Category	2.122	0.471
Nearest Bus Stop	1.077	0.928

3.3.2. Multicollinearity test

The summary of the overall fitting degree of the regression model is presented in **Table 6**. The VIF and tolerance of the regression model are met, so there is no multicollinearity between the independent variables.

Table 6. Summary table

R-square	Adjusted R-square	F-value	*P*-value
0.035	0.030	6.712	<0.001

3.3.3. Model selection

The F test also shows a good fit of the hedonic price model at 5% significance level. However, the R square value is smaller than the ideal situation. (The r-squared interpretation of this sentence can be borrowed, and the r-squared 0.030 is also very small on this side)

R2=1-SSE/SST=SSR/SST

F=6.712, *P*<0.001; therefore, the regression model is statistically significant and the model holds.

3.3.4. Descriptive statistics

In this multiple linear regression model, there are several core indicators of interest in this study: the coefficients and significance levels of the respective variables, the fit of the model, and the results of the test for multicollinearity between the variables.

First, the dependent variable Y in the model is hotel price, while the independent variables include hotel age (X1), star rating (X2), rating (X3), business district (X4), distance to airport (X5), airport category (X6), and nearest bus stop (X7). Based on the expected sign, the authors assumed that hotel age and distance to airport are negatively related to hotel price, while star rating, rating, and airport category are positively related to price, and the relationship between distance to nearest bus stop and price is to be determined. The results of the regression analysis are as follows.

The regression coefficient for star rating (X2) was 35.075 with a t-value of 2.157 corresponding to a P-value of 0.031, indicating that star rating is positively and statistically significantly related to hotel price.

The regression coefficient for rating (X3) was 82.617, with a t-value of 3.220 and a P-value of 0.001, with each point increase in rating associated with a significant increase in price.

The regression coefficient for nearest bus stop (X7) was 0.438 with a t-value of 3.421 and a P-value of 0.001, indicating that an increase in the distance to the bus stop implies an increase in price.

The effect of other variables, such as the age of the hotel, distance to airport, and category of airport, was not statistically significant with P-values of 0.292, 0.270, and 0.970, respectively.

In terms of the fit of the model, the R-squared value of 0.035 is only slightly higher than the adjusted R-squared value of 0.030, implying that the regression model explains only 3.5% of the variation in prices. Although the R-squared value is not particularly satisfactory, the overall model meets the requirements for fitting a hedonic pricing model at the 5% significance level. The F-test gives an F-value of 6.712 with a P-value of less than 0.001, suggesting that at least one of the explanatory variables in the model has a significant effect on the price of hotels.

In addition, we tested for multicollinearity through the variance inflation factor (VIF) and tolerance. Typically, a VIF value greater than 10 or a tolerance less than 0.1 indicates a serious covariance problem. In this analysis, all independent variables have VIF values less than 10 and tolerance values greater than 0.1, indicating that there is no multicollinearity among the independent variables.

To summarize the results of the regression analysis, although only three of the explanatory variables for hotel price, star rating, rating, and distance to the nearest bus stop were statistically significant, this points to several key factors that can be focused on when improving hotel ratings. Potential strategies include those that enhance service quality, increase customer satisfaction, and improve connectivity to public transport. It is worth noting that the moderate fit of this regression model implies that there may be other variables not included in the model that better explain the variation in price, and future research could further explore these latent variables to refine the model.

4. Results

4.1. Discovery overview

After conducting regression analyzes of hotel prices near Shanghai airports, the results of the study show that there is no significant correlation between hotel prices and distance from the airport. This finding was quite surprising, as it is common sense that the closer a hotel is to the airport, the higher its price should be for convenience reasons. However, this analysis of the data suggests that this intuition does not hold true, at least in the case of Shanghai's airport proximity.

In contrast, there is a positive relationship between a hotel's star rating, customer ratings, the distance of the hotel from a bus stop, and hotel prices. This result suggests that, at least in the sample, customers are willing to pay more for better service quality, higher star rating standards of facilities, and higher customer satisfaction. It also points to the fact that customers are more likely to consider the overall value offered by the hotel rather than just the convenience of the location when choosing a hotel.

Hotel star rating, as a sign of quality, usually means fancier finishes, better service, better facilities, and even more spacious rooms. It creates an expectation in the mind of the consumer that a hotel with a higher star rating is expected to provide a better accommodation experience. This shows that star rating as a signaling tool plays an important role in influencing consumer decision-making and prejudging hotel prices. Therefore, while raising their own star rating standards, companies can reasonably raise their prices to match service quality and consumer expectations.

Similarly, customer ratings reflect consumers' actual experience and satisfaction with a hotel. These ratings are based on the real feedback from the previous batch of accommodation customers and provide important information for other potential customers. Generally speaking, the higher the rating, the better the reputation of the hotel in the eyes of customers, and its price is relatively higher. In today's market environment, where information is transparent and the importance of user ratings is becoming more and more prominent, excellent customer ratings have become a key factor in attracting new customers and improving pricing power.

The distance to bus stops is then implicated in the accessibility of the hotel. Unlike the distance to the airport, the proximity of a bus stop is directly related to the ease of travel for guests. Guests may be more concerned about being able to quickly reach other parts of the city, especially business districts, attractions, and so on. Therefore, hotels with closer bus stops are more attractive to guests who do not have their own means of transport and can therefore charge higher prices.

4.2. Discovery overview

Regression analyzes show that the prices of hotels near Shanghai airports do not increase as the hotels get closer to the bus stops, but instead, there is a seemingly contradictory trend: the further away the bus stops are, the higher the prices of the hotels tend to be. This finding may seem counterintuitive, but it may actually reflect several hidden market phenomena and consumer preferences.

Firstly, hotels located away from bus stops are likely to be in more exclusive or upscale locations, such as scenic areas, high-end residential neighborhoods, or other popular tourist zones. These areas naturally have higher hotel prices due to their positioning as high-end markets and the exclusive experiences they offer. In addition, hotels in these locations often offer other forms of transport, such as airport transfers and private customized tours, so customers may be less reliant on public transport.

Secondly, hotels located away from public transport stations may be geared towards business customers, who may not have as urgent a need for the location and accessibility of the hotel as the average traveler. Business customers are more demanding in terms of the quality of hotel services, the availability of conference facilities, and the degree of professionalism, and are therefore less sensitive to price. In contrast, some business hotels do not even need to be close to public transport, as their clientele may prefer to use car or taxi services.

Furthermore, hotels that are far from public transport stations may have upgraded their hardware facilities and services to compensate for the inconvenience of their location, such as more luxurious decoration, more spacious rooms, and personalized services. In order to ensure revenue, hotels may increase their room rates moderately to

compensate for these cost increases.

4.3. Summary of main results

Finally, accurate data interpretation is also very much dependent on the representativeness of the sample selected. If the sample is small or the selection is biased, it may not be sufficient to show the true picture of the market as a whole. In addition, the factors influencing hotel prices are complex and may be affected by a combination of factors such as seasons, holidays, and large-scale events, in addition to bus stop distance, star rating, and rating considered in the regression analysis.

In conclusion, although the relationship between bus stop distance and hotel price may not seem intuitive at first glance, in-depth analyzes reveal that what is reflected behind it is the diversity of the market and the multiple demands of consumers. In response to this phenomenon, hotel operators should gain a deeper understanding of their own market positioning, as well as the specific needs of their customers, and adjust their business strategies accordingly.

In summary, although the distance of a hotel from the airport is not a key factor in determining the price of a hotel, its intrinsic service quality, customer satisfaction, and accessibility are key influencing factors. This finding provides a valuable basis for hotel managers to adjust their market positioning and strategies, i.e., they should focus on improving service quality, customer experience, and accessibility in order to attract more customers and achieve better profitability. In addition, it also provides future investors with a way to think about their investments, i.e., when choosing a hotel to invest in, they should pay more attention to these factors that can add value rather than a single geographical location.

5. Discussion

5.1. Implications of research findings

After the authors have analyzed the multiple linear regression analysis of hotel prices near Shanghai airports, the discussion section can address the model's findings, limitations, practical implications, and future research directions.

Firstly, what the model found is that hotel star rating and rating given by customers are two important factors in hotel pricing strategy, which is in line with consumers' intuition. A hotel's star rating and rating are usually considered as a measure of its quality and service level, so it is not difficult to understand that their effects on price show a positive correlation. However, the finding that proximity to the nearest bus stop is positively correlated with price may point to the specific nature of the Shanghai hotel market. This may indicate that proximity to a transport hub is not always a favorable factor for a hotel's location. And it could be related to the needs of business travelers, the preferences of leisure travelers seeking tranquility, or the unique strategic value of the location. However, due to the low explanatory power of the model, it is not possible to simply generalize these explanations to the general phenomenon.

However, there are clear limitations of the model, which fail to capture the diversity and complexity of price determinants. Simplifying the business districts and airport categories of hotel distribution into binary variables ignores the differences within individual business districts. For example, hotels within the Hongqiao business district may be flush with competition, while the business district may have more room for profitability due to the development of emerging areas. This neglect of intra-business district differences may lead to inaccuracies in the

model results. In addition, other variables not covered in this model that may affect prices, such as additional hotel services, operating costs, branding effects, and marketing strategies, need to be considered in future studies.

5.2. Comparison with previous studies

A multiple linear regression analysis of the prices of hotels near Shanghai airports provides some insights into how different factors affect hotel prices. However, this approach, while providing insights into linear relationships between variables, may have overlooked potential market segmentation. Introducing cluster analysis into this study can help us further understand the patterns of hotel price movements from a group perspective.

Cluster analysis is an unsupervised learning technique that attempts to group objects in such a way that objects within the same group are more similar to each other compared to other groups. In the context of this study, researchers can use cluster analysis to classify hotels into different groups based on their characteristics (e.g., star rating, rating, location, etc.), and then conduct regression analysis separately within each cluster to explore whether there are differences in the factors that affect prices in different market segments.

Firstly, the K-means clustering method is used to classify hotels into several different groups based on their star rating, rating, distance to the nearest bus stop, and other indicators. For example, researchers may find that some hotels with high star ratings and high ratings and far from major transport hubs naturally cluster into one group, while those with lower star ratings that rely on proximity to convenient transport locations to attract customers form another group.

Afterwards, regression analysis were performed for each group separately. In this way, researchers may find that the effect of rating on price is significantly higher than the effect of star rating in the high-end hotel group. This may be due to the fact that for customers in this segment, service quality and customer experience are the most important aspects of concern. Whereas within the group of budget hotels located in conveniently located zones, the proximity to the nearest bus stop may have a more direct impact on price, as customers in this group may prefer conveniently located locations.

This clustering-based analysis not only helps to reveal a more nuanced market structure but also provides more personalized insights. A deeper understanding of price drivers among different market segments will provide hotel managers with a more precise guide to their pricing strategies. For example, hotels targeting the high-end market may need to optimize their pricing strategy by focusing more on improving the quality of customer service and experience, whereas budget hotels that are located in convenient locations may be able to take advantage of their geographic location to optimize their pricing.

All in all, by combining regression and cluster analysis, the authors are able to gain a more comprehensive understanding of the multiple factors that influence hotel prices from both macro and micro perspectives. This approach not only improves our understanding of market structure but also provides more specific and differentiated guidelines for hotel management and pricing strategy development. Future research could further explore different clustering methods and more dimensional indicators with a view to gaining deeper market insights.

5.3. Implications of research findings

In view of the above limitations, the discussion also needs to point out that further methods combining quantitative and qualitative analysis are needed to deconstruct the real drivers of price formation. For example, case studies, focus group interviews, and consumer research could be conducted to reveal differences in price sensitivity,

diversification of customer preferences, and other potential determinants in different shopping districts.

Meanwhile, for statistically significant variables in the regression model, although they have a significant effect on price in the current sample, future research should focus on their economic significance and explore how specific factors affect customers' perceptions of price and willingness to pay. For this purpose, market research and consumer behavior studies can be used to complement the results of the regression analysis.

5.4. Future research direction

In future studies, the addition of time series analysis is highly recommended to examine the relationship between price changes and seasonal factors, economic cycles, and major events (e.g., World Expo, Olympics, etc.). Time series analysis can help us understand the long-term trend of price fluctuations and identify possible cyclical patterns, thus providing more in-depth insights into hotel business strategies. In addition, the application of non-linear models or machine learning algorithms may shed better light on the non-linearity and complexity of the relationships.

Finally, the discussion should also address the practical application value and strategic implications of the model. For example, based on the model results, a hotel may adjust its pricing strategy to provide differentiated services for different star ratings, or appropriately upgrade its service grade and price in certain strategically important areas in order to attract customers in specific market segments. The results of the model also suggest that hotel managers should consider not only the improvement of their own service level, but also pay attention to their strategic planning in terms of their geographical location, relationship with transport hubs, and customer ratings when setting their room rates.

In summary, when discussing the results of the multiple linear regression analysis of hotel price influencing factors, we should not only emphasize its findings, limitations, and practical application scenarios, but also look forward to future research directions and the further theoretical and practical implications it may bring.

6. Limitation
6.1. Methodological limitations

The authors have observed some interesting and statistically significant results in the regression model for hotel prices near Shanghai airports, and although these findings provide valuable insight, there are some limitations. These limitations and the implications this provides for future research are detailed below.

The first limitation is the explanatory power of the model. The R-squared value of the current model is only 0.035, suggesting that the model explains only 3.5% of the price variation, which implies that there is a large amount of variation that is not captured by the model. The possible reason for this is that the model may have omitted some important explanatory variables such as hotel amenities, room size and decoration style, room availability, hotel brand, market positioning, customer service level, etc. In addition, factors such as seasonal fluctuations in hotel prices, changes in supply and demand, and the impact of special events may have influenced prices. Future research needs to include these possible explanatory variables to improve the explanatory power of the model.

Second, some of the key variables in the dataset used in this analysis, such as business districts and airport categories, are distinguished only by Hongqiao=1 and Pudong=2. This simple binary variable may not capture the impact of the inherent diversity of these areas in sufficient detail. For example, different business districts may

have different market demands, consumer behaviors, and competition levels, all of which may have an impact on hotel prices. Future research could try to introduce more detailed geographic and market segmentation or more sophisticated quantitative analysis of business districts.

Third, statistical significance does not necessarily imply economic significance. While the relationships between star ratings, ratings, and nearest bus stops and hotel prices are statistically significant, whether the strength of these relationships is significant enough to influence pricing strategies in business practice needs to be further evaluated in context.

Fourth, the model may suffer from unobserved heterogeneity, which refers to individual differences or time-series effects that are not captured by the model. For example, management strategies, customer loyalty, and the historical context of different hotels are factors that are difficult to quantify, but they may have a significant impact on prices. Future research could try to incorporate panel data analysis to distinguish between time effects and individual effects on prices.

Data collection is a crucial aspect of any research as it directly affects the validity and reliability of the study. Here, the fifth link is to consider the time point of data collection.

Firstly, it is important to realize that if data is only selected for a specific time period, then the seasonal and trend changes in hotel prices may be overlooked. Hotel prices are not static; they are dynamically adjusted according to a variety of factors such as seasons, holidays, and market demand. If researchers only focus on a specific period of time, such as summer or winter, the data obtained may lose representativeness and fail to fully reflect the changes in hotel prices. The accuracy and credibility of such data analysis results may be greatly reduced.

Secondly, in order to obtain a more comprehensive analysis, future studies should try to cover data over a longer period of time. This is because data with a longer time horizon can help us better understand the patterns and trends of hotel price changes, and can allow us to see the up and down fluctuations of hotel prices over the course of a year, the trend changes over the course of several years, and so on. With this information, researchers can grasp the pattern of hotel price movements as a whole, rather than just a localized, one-sided perspective.

Then again, in addition to data covering a longer time horizon, researchers should also consider using time series analysis methods. Time series analysis is a powerful statistical tool that can help us analyze and predict the trend, periodicity, seasonality, and other characteristics of data over time. Through time series analysis, researchers can more accurately predict future hotel prices and also gain a deeper understanding of the various factors that influence hotel price changes.

In summary, the time point of data collection is a very important issue, which directly affects whether researchers can obtain effective, accurate and comprehensive analysis results. Future research should pay attention to this issue and try to cover a longer time range of data as much as possible, while also considering the use of advanced statistical methods such as time series analysis so that researchers can better understand and predict the movement of hotel prices.

6.2. Data restrictions

Regression analysis, as a common statistical method, has been widely used in many studies, especially in studies analyzing the relationship between prices and various factors. However, as many researchers have pointed out, the linear assumptions on which regression analysis is based do not always accurately reflect the actual situation. In the actual market environment, the relationship between hotel prices and their influencing factors may be non-

linear, and there may even be a variety of complex interaction effects, all of which are difficult to capture in a linear model.

In the case of hotel prices near Shanghai airports, the subject of this study, for example, price changes are affected by a variety of factors, including, but not limited to, seasonal changes, holiday effects, number of flights, and tourism activities. There may be interactions between these factors; for example, the holding of a large international conference may affect both the number of flights and tourism activities, which in turn affects hotel prices. In this case, a simple linear model would not be able to fully explain the price changes.

Therefore, exploring the use of more complex models becomes an inevitable trend in future research. The generalized additive model (GAM) is a non-linear statistical model that can handle both linear and non-linear relationships between variables and better adapt to the actual distribution of data. In addition, with the rapid development of artificial intelligence technology, machine learning methods are increasingly applied to research in various fields. Machine learning algorithms, such as decision trees, random forests, support vector machines, neural networks, etc., have powerful data fitting capabilities and can automatically identify complex patterns and relationships in data, which makes them show great advantages in dealing with nonlinear problems and pattern recognition.

Nevertheless, the adoption of these more complex models also brings new challenges, including model interpretability, parameter selection, and risk of overfitting. Therefore, future researchers need to weigh various factors and make appropriate choices when selecting models based on the specific needs of the study and the characteristics of the data.

Overall, although this study provides initial insights into the factors influencing the price of hotels near Shanghai airports, it also exposes a number of limitations. Future studies should make improvements in data collection and model selection with a view to obtaining a more comprehensive and in-depth understanding. This is not only important for academic research but also for industry players to provide a more accurate basis for market forecasting and strategy formulation. With the increasingly competitive environment, companies and researchers that can accurately understand and predict market changes will undoubtedly be in a favorable position in this competition.

6.3. Generalized ranges

Regression analysis, as a common statistical method, has been widely used in many studies, especially in studies analyzing the relationship between prices and various factors. However, as many researchers have pointed out, the linear assumptions on which regression analysis is based do not always accurately reflect the actual situation. In the actual market environment, the relationship between hotel prices and their influencing factors may be non-linear, and there may even be a variety of complex interaction effects, all of which are difficult to capture in a linear model.

In the case of hotel prices near Shanghai airports, the subject of this study, for example, price changes are affected by a variety of factors, including, but not limited to, seasonal changes, holiday effects, number of flights, and tourism activities. There may be interactions between these factors; for example, the holding of a large international conference may affect both the number of flights and tourism activities, which in turn affects hotel prices. In this case, a simple linear model would not be able to fully explain the price changes.

Therefore, exploring the use of more complex models becomes an inevitable trend in future research. The generalized additive model (GAM) is a non-linear statistical model that can handle both linear and non-linear

relationships between variables and better adapt to the actual distribution of data. In addition, with the rapid development of artificial intelligence technology, machine learning methods are increasingly applied to research in various fields. Machine learning algorithms, such as decision trees, random forests, support vector machines, neural networks, etc., have powerful data fitting capabilities and can automatically identify complex patterns and relationships in data, which makes them show great advantages in dealing with nonlinear problems and pattern recognition.

Nevertheless, the adoption of these more complex models also brings new challenges, including model interpretability, parameter selection, and risk of overfitting. Therefore, future researchers need to weigh various factors and make appropriate choices when selecting models based on the specific needs of the study and the characteristics of the data.

Overall, although this study provides initial insights into the factors influencing the price of hotels near Shanghai airports, it also exposes a number of limitations. Future studies should make improvements in data collection and model selection with a view to obtaining a more comprehensive and in-depth understanding. This is not only important for academic research but also for industry players to provide a more accurate basis for market forecasting and strategy formulation. With the increasingly competitive environment, companies and researchers that can accurately understand and predict market changes will undoubtedly be in a favorable position in this competition.

7. Conclusion

This paper analyzes the influencing factors of hotel prices near Shanghai airports through a multiple linear regression model. According to the results of the regression analysis, hotel star rating, customer ratings, and distance to the nearest bus stop have a significant impact on hotel pricing. These results reflect the importance of factors such as hotel location attributes, service quality, and accessibility on consumer choice and willingness to pay. This study provides valuable insight, but due to its limitations, future research is needed to continue to explore this in depth.

Key findings from the model analysis include:

Hotel star rating and customer ratings are positively related to hotel price, reflecting consumers' recognition of the quality and service level of the hotel and their willingness to pay a higher price for it.

Distance to the nearest bus stop is positively correlated with hotel price, implying that the proximity of the bus stop is not a key factor influencing price, but is related to the value customers place on other hotel attributes, such as the unique experience the hotel offers or other transport services.

Nonetheless, the model has limitations, mainly:

The low R-squared value indicates that the model explains only a small portion of the price variance, pointing out that the model may have omitted other important explanatory variables, such as other hotel amenities and services, and seasonal factors.

The introduction of some variables may be oversimplified, such as reducing the business district and airport categories to binary variables, which does not adequately capture the market characteristics within business districts or across different airports.

The time period of data collection may not provide a comprehensive representation of price movements, and future research should cover a longer time horizon, taking into account seasonal and trend movements in prices.

There may be complex interaction effects or non-linear relationships between factors, and future research could attempt to capture these complex patterns using more advanced statistical methods.

This study is a guide for practical hotel management and investment decisions. Firstly, hoteliers can optimize their service quality based on star ratings and customer ratings to meet consumers' expected value; secondly, for the concern of accessibility, hotels need to provide other special services or amenities that appeal to consumers while meeting basic transport needs. Future marketing strategies should take into account the combined effects of various factors such as star rating, customer ratings, and location, and develop pricing and service strategies based on these.

Finally, future research should continue to deepen the understanding of factors influencing hotel prices by introducing new variables, collecting extensive data, and using advanced analytical methods. This will help the industry to understand the needs of different customer segments from various perspectives and enable the hospitality industry to remain competitive in the face of fierce competition.

Disclosure statement

The author declares no conflict of interest.

References

[1] Adabre MA, Chan APC, 2019, Critical success factors (CSFs) for sustainable affordable housing. Building and Environment, 2019(156): 203–214. https://doi.org/10.1016/j.buildenv.2019.04.030

[2] Andersson DE, 2010, Hotel Attributes and Hedonic Prices: An Analysis of Internet-based Transactions in Singapore's Market for Hotel Rooms. Annals of Regional Science, 44(2): 229–240. https://doi.org/10.1007/s00168-008-0265-4

[3] Andersson DE, Jia M, 2019, Official and Subjective Hotel Attributes Compared: Online Hotel Rates in Shanghai. Journal of China Tourism Research, 15(1): 50–65. https://doi.org/10.1080/19388160.2018.1515138

[4] Arzaghi M, Henderson JV, 2008, Networking off Madison Avenue. Review of Economic Studies, 75(4): 1011–1038. https://doi.org/10.1111/j.1467-937X.2008.00499.x

[5] Arzaghi M, Genc IH, Naik S, 2023, Clustering and Hotel Room Prices in Dubai. Tourism Economics, 29(1): 116–136. https://doi.org/10.1177/13548166211040931

[6] Aziz A, 2023, Proximity to Neighborhood Services and Property Values in Urban Area: An Evaluation through the Hedonic Pricing Model. Land, 12(4): 859. https://doi.org/10.3390/land12040859

[7] Aziz A, Anwar MM, Dawood M, 2020, The Impact of Neighborhood Services on Land Values: An Estimation through the Hedonic Pricing Model. GeoJournal, 86(4): 1915–1925. https://doi.org/10.1007/s10708-019-10127-w

[8] Bishop RC, Freeman AM, 1996, The Measurement of Environmental and Resource Values: Theory and Methods. Land Economics, 72(2): 274. https://doi.org/10.2307/3146972

[9] Bottero M, 2022, Urban Parks, Value Uplift and Green Gentrification: An Application of the Spatial Hedonic Model in the City of Brisbane. Urban Forestry & Urban Greening, 2022(74): 127618. https://doi.org/10.1016/j.ufug.2022.127618

[10] Boyle KJ, Bergstrom JC, 1992, Benefit Transfer Studies: Myths, Pragmatism, and Idealism. Water Resources Research, 28(3): 657–663. https://doi.org/10.1029/91wr02591

[11] Brown JN, Rosen HS, 1982, On the Estimation of Structural Hedonic Price Models. Econometrica, 50(3): 765–768. https://doi.org/10.2307/1912614

[12] Brueckner JK, 2003, Airline Traffic and Urban Economic Development. Urban Studies, 40(8): 1455–1469. https://doi.org/10.1080/0042098032000094388

[13] Can A, 1992, Specification and Estimation of Hedonic Housing Price Models. Regional Science and Urban Economics, 22(3): 453–474. https://doi.org/10.1016/0166-0462(92)90039-4

[14] Lien CH, 2015, Online Hotel Booking: The Effects of Brand Image, Price, Trust and Value on Purchase Intentions. Asia Pacific Management Review, 20(4): 210–218. https://doi.org/10.1016/j.apmrv.2015.03.005

[15] Chen C, Rothschild R, 2010, An Application of Hedonic Pricing Analysis to the Case of Hotel Rooms in Taipei. Tourism Economics, 16(3): 685–694. https://doi.org/10.5367/000000010792278310

[16] China Tourist Hotel Association, 2023, Star-rated Hotel Operating Report for the First Half of 2023. Accessed on December 8, 2024, https://finance.sina.com.cn/jjxw/2023-05-10/doc-imythsmt7701226.shtml

[17] Fernandez L, Mukherjee M, Scott T, 2018, The Effect of Conservation Policy and Varied Open Space on Residential Property Values: A Dynamic Hedonic Analysis. Land Use Policy, 2018(73): 480–487. https://doi. org/10.1016/j.landusepol.2017.12.058

[18] Fuerst F, 2008, Spatial Patterns of Office Employment in the New York Region. Social Science Research Network, preprint. https://doi.org/10.2139/ssrn.1263373

[19] Gatzlaff DH, Smith MT, 1993, The Impact of the Miami Metrorail on the Value of Residences near Station Locations. Land Economics, 69(1): 54. https://doi.org/10.2307/3146278

[20] González-Rodríguez MR, Díaz-Fernández MC, Font X, 2020, Factors Influencing Willingness of Customers of Environmentally Friendly Hotels to Pay A Price Premium. International Journal of Contemporary Hospitality Management, 32(1): 60–80. https://doi.org/10.1108/IJCHM-02-2019-0147

[21] Helbich M, Leitner M, Kapusta ND, 2012, Geospatial Examination of Lithium in Drinking Water and Suicide Mortality. International Journal of Health Geographics, 11(1): 19. https://doi.org/10.1186/1476-072x-11-19

[22] Hwang M, Quigley JM, 2006, Economic Fundamentals in Local Housing Markets: Evidence from U.S. Metropolitan Regions. Journal of Regional Science, 46(3): 425–453. https://doi.org/10.1111/j.1467-9787.2006.00480.x

[23] Işik C, Bïlïcï N, 2017, Otel Oda Fiyatlarının Hedonik Model İle Analizi: Erzurum Örneği. Journal of Graduate School of Social Sciences, 21(1): 305–315.

[24] Ke X, 2022, Impact of Different Ecological Landscapes on Housing Prices—Empirical Evidence from Wuhan through the Hedonic Pricing Model Appraisal. Journal of Housing and the Built Environment, 38(2): 1289–1308. https://doi.org/10.1007/s10901-022-09990-w

[25] Kim YR, 2021, Spatial Spillovers of Agglomeration Economies and Productivity in the Tourism Industry: The Case of the UK. Tourism Management, 2021(82): 104201. https://doi.org/10.1016/j.tourman.2020.104201

[26] Lancaster K, 1966, A New Approach to Consumer Theory. Journal of Political Economy, 74(2): 132–157. https://doi.org/10.1086/259131

[27] Latinopoulos D, 2018, Using a Spatial Hedonic Analysis to Evaluate the Effect of Sea View on Hotel Prices. Tourism Management, 2018(65): 87–99. https://doi.org/10.1016/j.tourman.2017.09.019

[28] Lavaine E, 2019, Environmental Risk and Differentiated Housing Values: Evidence from the North of France. Journal of Housing Economics, 2019(44): 74–87. https://doi-org-s.elink.xjtlu.edu.cn:443/10.1016/j.jhe.2019.02.001

[29] Lehto XY, Kim DY, Morrison AM, 2006, The Effect of Prior Destination Experience on Online Information Search Behaviour. Tourism & Hospitality Research, 6(2): 160–178. https://doi.org/10.1057/palgrave.thr.6040053

[30] Li W, Saphores JD, 2011, A Spatial Hedonic Analysis of the Value of Urban Land Cover in the Multifamily Housing Market in Los Angeles, CA. Urban Studies, 49(12): 2597–2615. https://doi.org/10.1177/0042098011429486

[31] Lien G, Kumbhakar SC, 2022, Overpricing in a Spatial Hedonic Frontier Model: The Case of Ski Lift Tickets in Norway. International Journal of Empirical Economics, 1(3): 2250011–2250018. https://doi.org/10.1142/S2810943022500111

[32] Mandić A, Petrić L, 2021, The Impacts of Location and Attributes of Protected Natural Areas on Hotel Prices: Implications for Sustainable Tourism Development. Environment, Development and Sustainability: A Multidisciplinary Approach to the Theory and Practice of Sustainable Development, 23(1): 833–863. https://doi.org/10.1007/s10668-020-00611-6

[33] McGuire KA, 2016, Hotel Pricing in a Social World: Driving Value in the Digital Economy. https://search-ebscohost-com-s.elink.xjtlu.edu.cn:443/login.aspx?direct=true&db=edsoai&AN=edsoai.on1342676879&site=eds-live&scope=site

[34] Moro S, Oliveira C, Rita P, 2018, Factors Influencing Hotels' Online Prices. Journal of Hospitality Marketing and Management, 27(4): 443–464. https://doi.org/10.1080/19368623.2018.1395379

[35] Neto F, Amir B, 2021, The Diffusion of Cultural District Laws across US States. The Annals of Regional Science, 67(1): 189–210. https://doi.org/10.1007/s00168-020-01045-8

[36] Newell G, Seabrook R, 2006, Factors Influencing Hotel Investment Decision Making. Journal of Property Investment and Finance, 24(4): 279–294. https://doi.org/10.1108/14635780610674499

[37] Ozsoy O, Ahunov M, 2023, Hedonic Housing Values in a Transition Economy: The Case of Tashkent. International Journal of Housing Markets and Analysis, 16(5): 853–872. https://doi.org/10.1108/IJHMA-03-2022-0042

[38] Palmquist RB, 1984, Estimating the Demand for the Characteristics of Housing. The Review of Economics and Statistics, 66(3): 394. https://doi.org/10.2307/1924995

[39] Radojevic T, Stanisic N, Stanic N, 2015, Ensuring Positive Feedback: Factors that Influence Customer Satisfaction in the Contemporary Hospitality Industry. Tourism Management, 2015(51): 13–21. https://doi.org/10.1016/j.tourman.2015.04.002

[40] Rosen S, 1974, Hedonic Prices and Implicit Markets: Product Differentiation in Pure Competition. Journal of Political Economy, 82(1): 34. https://doi.org/10.1086/260169

[41] Shaver JM, Flyer F, 2000, Agglomeration Economies, Firm Heterogeneity, and Foreign Direct Investment in the United States. Strategic Management Journal, 21(12): 1175–1193. https://doi.org/10.1002/1097-0266(200012)21:12

[42] Shoval N, 2011, Hotel Location and Tourist Activity in Cities. Annals of Tourism Research, 38(4): 1594–1612. https://doi.org/10.1016/j.annals.2011.02.007

[43] Sirmans GS, Macpherson DA, Zietz EN, 2005, The Composition of Hedonic Pricing Models. Journal of Real Estate Literature, 13(1): 1–44. https://doi.org/10.1080/10835547.2005.12090154

[44] Smith LB, Rosen KT, Fallis G, 1988, Recent Developments in Economic Models of Housing Markets. Journal of Economic Literature, 26(1): 29.