



# Research on hotel service quality evaluation based on big data analysis

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**Abstract.** With the development and application of digital technology, the process of digital transformation of the tourism industry continues to advance, gradually changing the way of information generation and dissemination. The online reputation of hotels has gradually become an important reference factor for customers to book online. With the support of big data technology, this paper takes 27 hotels under Radisson Hotel Group as the research object, collects the text content of the hotel group's customers' real comments on Ctrip and Flying Pig, and uses ROST CM6 software to analyze the satisfaction, network semantics, emotional orientation and other data in the hotel entry experience of Radisson Hotel Group, so as to evaluate the service quality of Radisson Hotel Group. According to the analysis results, provide suggestions for the hotel to improve service quality, and improve customer satisfaction by improving the hotel's online reputation.

**Keywords:** Big data; Online reviews; Network text analysis; The quality of service

## 1 Introduction

Tourism information search is the first step for tourists to make travel decisions. With the advent of the digital economy era and the application of digital technology, the tourism environment and the behavior mode of tourists have undergone tremendous changes. Online information search has become the primary link for tourists to obtain tourism information and make tourism decisions. According to the data of Analysys, the scale of online travel transactions in China is increasing year by year, and more and more customers choose to book online. The risk of online booking makes customers' online comments become an important source of information for potential customers to quickly understand and buy things.[1]

Due to the synchronization of production and consumption of hotel products, the hotel has completed the production and delivery of products in the process of hotel consumption. As consumers cannot try the product in advance, the hotel's reputation image has become the main consideration for customers to choose hotels. Online reviews are an important source of hotel reputation, which directly affects consumer decision-making. In order to further improve the hotel service quality, it is necessary

to analyze customers' online comments. [2] By using the network text analysis method, this paper summarizes and sorts out the high-frequency words of the customer's network comments, and constructs an online evaluation system for the service quality of the hotel group, which helps to clarify consumer needs, identify the deficiencies in the hotel's customer service management, and thus improve the hotel's service quality.

Under the background of the big data era, unstructured data such as text is growing explosively. How to mine valuable information from massive and disorderly data is a problem that most scholars are concerned about. Based on large data technology support, the article by radisson hotel group's 27 hotels as the research object, using octopus collect hotel group customer real comments on ctrip, flying pigs text content, using the ROST CM6 word processing software for customer comments on text content, different present frequency during the vocabulary statistics, analysis of the semantic network, emotional tendency, such as data, And the formation of customer praise and bad comments of high frequency word cloud map. This paper analyzes the problems existing in the service management of the hotel, and puts forward suggestions to improve the service quality of the hotel, so as to enhance the online reputation image of the hotel.

## **2 Literature review**

The network text analysis method is a kind of content analysis method, which is a quantitative reflection of the content of the research method, through the further analysis of the content of the representation, the useful quantitative data can be obtained.[3] Network text analysis has been studied in various fields of tourism, and is currently widely used in hotel service quality evaluation, tourist destination image perception, hotel consumer satisfaction and other research fields. In the study of hotel service quality evaluation, Wang Jiayuan et al. [4] selected the review data of Tujia's official website and conducted a study on the service quality evaluation of Tujia's self-operated apartment from three indicators, including overall evaluation, equipment and facilities, basic services and additional functions. The results showed that customers had high satisfaction with its comprehensive service quality. The article will also analyze 27 hotels under Radisson Hotel Group through online text analysis to evaluate their service quality.

## **3 Big data collection and data analysis**

### **3.1 Overview of Study Subjects.**

Zhejiang Radisson Hotel Group Co., Ltd. belongs to Zhejiang Tourism Investment Group, is a state-owned enterprise with hotel asset-light operation as its core business. The group owns many well-known hotels and brands, including 12 brands such as Radisson. By the end of 2021, Radisson Hotels Group had 167 hotels with a total of 26,845 rooms, ranking 63rd among global hotel groups and 25th among China Hotel Group. The gathering of well-known hotels and credit endorsement form favorable

supporting conditions for Radisson Hotel series brand to expand in the province, Yangtze River Delta region and even the national market.

### 3.2 Data collection

27 hotels under Radisson Hotel Group were selected as the object of customer review data collection, through the online text collection software "Octopus", we crawled the real online comments about the above hotels from Ctrip and Feizhu. In order to ensure the effectiveness and accuracy of the analysis, this paper has excluded the comments on the introduction of scenic spots with obvious advertising nature, the same content, unrelated to the case location, the content is random, and the content is widely copied from the hotel introduction. In this paper, 14952 comments were collected from Feizhu, 49960 comments from Ctrip, and 64912 valid comments were collected as research texts.

### 3.3 Data analysis

#### 1) Analysis of high-frequency words in online comments.

ROST CM6 software was used to analyze the collected texts, and "word segmentation" and "word frequency statistics" were performed on the text data. Some entries that were meaningless to the research topic and had no impact on the research results were manually eliminated, and 30 co-occurring high-frequency words were retained (Table 1).

**Table 1.** Customer review word frequency analysis table

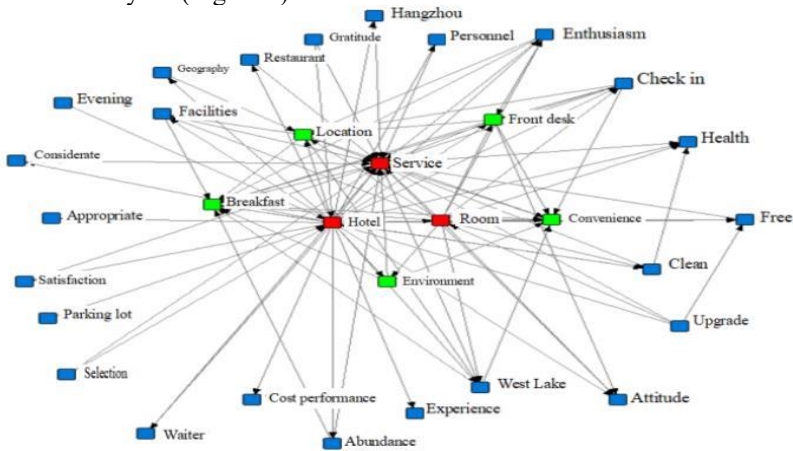
High-frequency words	frequency	High-frequency words	frequency	High-frequency words	frequency
Hotel	2740	Environment	2581	Initiative	2221
Service	2634	Convenience	2576	Enthusiasm	2294
Room	2620	Front desk	2563	Hardware facilities	2246
Breakfast	2612	Comfortable	2360	Hygiene	2234
Location	2609	The west lake	2322	Clean	2183

The high profile of Radisson Hotels Group has led to high demands from guests on service, rooms, location and environment. It can be seen from the word frequency statistics of customers' online comments that customers are very concerned about hotel services, rooms and their internal facilities, location, hygiene, and surrounding environment. In addition, there are more words are guests' evaluation of the hotel service product consumption experience emotional words, such as "convenient", "comfortable", "active" and so on.

#### 2) Semantic network analysis.

Image in order to more intuitive understanding of the relationship between the customer reviews each high frequency vocabulary, using ROST CM6 software visualization function, to online customer reviews of high frequency words in the text, the

critique of "social network with the semantic network analysis", it is concluded that the hotel each perception elements of semantic network diagram, the high frequency of key visual analysis. (Figure 1)



**Fig. 1.** Semantic Network analysis diagram of online customer comments

As can be seen from Figure 1, this semantic network diagram presents the characteristics of partial concentration and overall dispersion. Centering on "hotel", "service" and "room", this is also the most frequently mentioned vocabulary by customers. The closely related vocabulary includes "breakfast", "location", "environment", "convenience" and "front desk". Among them, "room", "location" and "environment" are the essential attributes of the hotel. They are the hardware conditions that need to be considered in the early stage of hotel construction. Therefore, customers pay more attention to the hardware facilities of the hotel. According to the text analysis of customer network evaluation, the hotel guests are satisfied with the hardware facilities. "Breakfast" and "front desk" are the most basic services for all hotel guests. "Service" is the most basic nature of the hotel as a service industry, so customers pay great attention to the hotel "service". In the check-in process, customers generally mentioned the hospitality, thoughtful service and good attitude of the hotel staff, indicating that customers have a high overall satisfaction with the hotels under the hotel group. "Convenience", "Comfortable" and "enthusiasm" are the emotional expressions of the customers during or after the hotel stay experience. From these words, the satisfaction of the customers to the hotel stay can be understood.

### 3)Customer sentiment analysis.

Emotion is a direct expression of the customer's satisfaction with the hotel and its service, which directly reflects the customer's emotional change process in the process of accommodation experience, so its analysis is the key to evaluate the quality of hotel service. Analyze the effective online review data of Hotel Group collected through the "emotion analysis" option in the "functional analysis" of ROST CM6 software and customer emotional analysis results are obtained, as shown in Table 2.

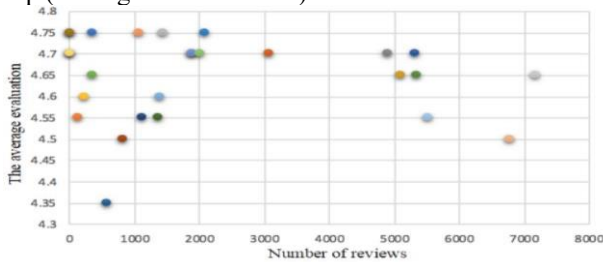
**Table 2.** Customer sentiment analysis

Category	Height		Moderate		General	
	Number of branches	Pro-portion	Number of branches	Pro-portion	Number of branches	Pro-portion
Positive emotions	6889	17.56%	10302	26.26%	13820	35.22%
Negative emotions	48	0.12%	469	1.20%	2071	5.28%

It can be seen from Table 2 that among the 39236 reviews collected and screened. The proportion of positive and neutral emotions of customers reached 93.08%, indicating that the overall impression of customers on 27 hotels under Radisson Hotel Group was positive and customer satisfaction was high.

**4)Service quality analysis.**

Statistics were made on the scores and comments of 27 hotels under Radisson Hotel Group in Ctrip and Flying Pigs. It was found that the score of 26 hotels in the hotel group (the average of Ctrip score and Flying Pig score) was 4.5 or above. It fully shows that the overall service quality of Radisson Hotel Group is good, customers are willing to give a higher score, and most customers are satisfied with the hotel service of the hotel group (see Figure 2 for details).



**Fig. 2.** Analysis of hotel service quality

**4 Conclusion and Discussion**

**4.1 Conclusion**

Based on the support of big data technology, this research obtains online customer review text data of 27 hotels under Radisson Hotel Group through text analysis, and uses ROST CM6 software to deeply mine the content of customer review text, thus evaluating the hotel service quality. The analysis shows that "service", "room", "facility" and "location" are the key factors for customers to pay attention to online booking.[5] As front-line service personnel, hotel staff's service attitude, service efficiency and other problems greatly affect the customer's consumption experience in the hotel. The problem of inadequate service raised by customers involves hotel reception, con-

cierge, security and other positions. The negative evaluation of hotel facilities and equipment is mainly reflected in such aspects as "incomplete equipment", "wet room" and "basically no sound insulation in the room". The hotel has many problems in staff service, sanitation, facilities and equipment, which has a very bad impact on the hotel's online reputation. Some guests say that "this is the worst five-star hotel they have ever stayed in".

## **4.2 Hotel service quality management improvement suggestions**

By radisson hotel group, 27 hotels customers online reviews online text data analysis, although customers more positive impression of hotel group as a whole, customer satisfaction is higher, the staff of the guest services and facilities of the daily maintenance and sanitation clean there are still many needs to be improved. In order to improve the hotel's reception service quality, enhance customers' consumption experience during their stay in the hotel, and improve customer satisfaction, the following suggestions are proposed for the hotel group. [6]

### **1)Strengthen the supervision and management of staff and the training of service consciousness.**

Through online text analysis, it is found that many negative comments in customers' online comments are caused by employees' weak service awareness, poor service attitude and untimely service. Therefore, a) it is necessary to strengthen the training of staff's service consciousness, formulate and clarify the hotel's service standards for guests, and standardize staff's behavior through institutional standards.[3] b) Deepen the reform of the employment system mechanism: promote the construction of Radisson Hotel Research Institute, implement the talent cultivation and reserve project, carry out targeted training, and build a talent echelon. c) Establish a salary incentive mechanism: mobilize the enthusiasm of employees, and encourage employees to provide better services through incentive measures.[6]

### **2)Improve room equipment and facilities, strictly observe the bottom line of hygiene.**

Through online text analysis, it is found that customers pay more attention to the quality and hygiene of guest room equipment and facilities. The hotel shall clean, maintain and inspect the guest room at all times to ensure that the clean and comfortable side of the guest room is displayed to the guests, making them feel at home. a) The grass-roots staff of the hotel should strictly implement the hotel's sanitation and inspection standards for facilities and equipment, and pay special attention to the cleaning of the sanitary dead corners that are easy to ignore, such as curtains, walls, countertops, etc. b) Establish an information channel for effective communication with customers, and receive customer feedback in a timely manner through the establishment of brand community, enterprise official account and other means, and seize the time to rectify. c) Establish the hotel room inspection table, arrange special personnel to check the room facilities and equipment every day, and repair the damaged

equipment in time.

### **3) Operate good network word of mouth, timely handle related comments and complaints.**

Information sharing is the trend of this era. The hotel should always pay attention to the dynamic of the network platform, timely pay attention to the customers' good and bad reviews, and respectively count the good and bad review rates. For the bad review, the hotel should timely express sincere apologies to customers and carefully explain, and finally put forward the corresponding solutions. After that, I will analyze the reasons why customers are not satisfied, and then make targeted improvements. In view of the praise, the hotel should thank the customer's praise and said to look forward to the guests stay again, in response to customers can again promote the hotel's characteristic products or services, so as to achieve the effect of further promotion. On the one hand, improve the quality of platform tourism products and build brand reputation. On the other hand, by providing real information, the difference in customer experience can be reduced as much as possible to improve customer satisfaction with the service.[4]

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