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**RESEARCH ARTICLE**

# An Analysis of the Impact of Xi'an Hotels' Service Quality Using network Text

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| ARTICLE INFO | ABSTRACT |
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| | This study aims to explore the role of online customer reviews in the hotel industry and their impact on the perception of service quality and customer satisfaction. It will investigate the relationship between online reviews and customer decision-making, with the goal of contributing to the enhancement of service quality assessment methods and practices. This study employs expectation confirmation theory to examine customer satisfaction by comparing pre-purchase expectations with post-purchase perceptions of hotel service quality. Analyzing customer review data from the popular hotel booking website www.ctrip.com, this research aims to assess the impact of factors such as accommodation infrastructure quality, location conditions, employee service quality, and hygiene quality on customer satisfaction. Ultimately, using a correlation matrix analysis, the study explores the relationship between hotel infrastructure, geographical location, hygiene, and service quality. Research indicates employee service quality, location, accommodation infrastructure, and hygiene positively affect customer satisfaction. Infrastructure is crucial, with staff service and hygiene standards directly impacting guest experiences. Future studies should expand hotel types and locations, using advanced models for more precise sentiment analysis. |

## INTRODUCTION

Customers are becoming more and more likely to gather information and assess it online due to the widespread use of the internet and the quick growth of e-commerce. A growing number of consumers, particularly in the hotel sector, are used to reviewing their experience with a brand when they check in. Nationwide, there have been more than 30 million internet reviews of hotels in 2023 alone. Consumers are the primary judges of employee service quality and gathering accurate feedback on their actual service experience is essential to assessing service quality (John, 2003). Online customer reviews often mirror the contrast between the expectations of consumers and their experience perceptions (Pandey et al., 2023). They also demonstrate how customers prioritize their perceptions and assessments of the employee service quality. Before booking a hotel, customers can use relevant web reviews to their advantage.

They can also use comments left by previous guests to gather information about the hotel's amenities and quality of stay (Ren et al., 2015). In addition, the hotel itself can utilize online assessment to assess the quality of its services, continuously raise the standard of its own services, boost client satisfaction, and become more competitive in the market.

The needs of society for the hotel business are progressively growing as a result of the economy of our nation expanding quickly and people's consumption levels rising. In addition to providing

uniform lodging services, hotels must also significantly increase their competitiveness. In order to better understand the evaluation elements that affect employee service quality and their impact on customer satisfaction, we must take use of online evaluation's advantages.

Scholars have developed various evaluation dimensions for service quality from various perspectives, integrating different disciplines and domain thinking, before studying the relationship between network evaluation and service quality evaluation. According to Grönroos (1984) these include the Service Quality Concept Model, the Service Quality Gap Model (SERVQUAL, Service Quality) and the Service Performance Perception Model (SERVPERF) of Cronin. Customer satisfaction with hotels varies depending on the type of online assessment system used on digital platforms, specifically whether open text or selective comments are used (Xu, 2021). Additionally, academics have defined and dissected hotel service quality, and then developed techniques for evaluating it. Typically, two perspectives are used in research on the relationship between online evaluation and consumer decision-making: implementation pathways and influencing factors (Wu et al., 2022). Perceived usefulness, perceived trust, and perceived value are the key implementation paths that are the subject of current research (Singh & Sinha, 2020).

In the extant literature on employee service quality assessment via online means, the online comment data of a certain website is typically chosen, and the hotel's service quality is assessed by the application of basic word frequency statistical analysis. While these studies can offer tailored problem analysis and strategies for improvement, the conclusions' applicability and generalizability are severely limited. Additionally, the majority of these assessment methods assess hotel service quality from the standpoint of industry norms, such as how hotel financial variables affect guest satisfaction (Alexakis et al., 2021). It is not feasible to present a significant number of quantitative findings on the actual hotel experiences that guests have. The difference in hotel hardware equipment is currently getting smaller and smaller. In order to provide customers with a better stay experience, we can only guarantee that each customer's needs are satisfied to the greatest extent feasible by strengthening different aspects of software strength, including the performance of hotel service professionals (Geetha et al., 2017).

One of the significant birthplaces of Chinese culture and the Chinese people is Xi'an, the former capital of the Thirteen Dynasties. It is a must-see location for travelers because of its renowned cultural legacy, which includes the Big Wild Goose Pagoda, Huaqing Pool, and Terra Cotta Warriors. The hotel industry in Xi'an has grown thanks to the cultural tourist sector (Wang et al., 2021). Guest satisfaction is somewhat impacted by the level of service provided by the hotel sector, which is one of the cornerstones of the tourist business (Nunkoo et al., 2020). The surrounding environment, the choice of hotel location, and the caliber of the services provided all have a big influence on how well hotels develop (Au et al., 2014). As a result, we expanded on the study done by Au et al. (2014), by using five-star hotels in the province of Xi'an as the research subject. We thoroughly investigated additional factors linked to the assessment of employee service quality, such as lodging infrastructure, geographic circumstances, and employee service quality, based on online evaluation texts. Examine how the four dimensions of hygiene quality affect consumer positive satisfaction with hotel offerings and the relationship between hotel offerings and their respective features.

A Bidirectional Encoder Representation from Transformers model was created using data processing software for quantitative analysis in order to evaluate emotional inclinations and investigate customer attitudes and perceptions regarding the caliber of employee services. These studies show the relationship between online assessment and service quality from many angles, which are crucial for enhancing hotel service quality and optimizing the method for evaluating service quality (Devlin et al., 2019).

## LITERATURE REVIEW

The foundation of hotel operations is customer Satisfaction (Sun & Kim, 2013). The study of customer satisfaction dates back to introduction of this idea to the marketing field (Alexakis et al., 2021). It is currently defined by the academic community as the direct effect of actual consumer experience on customer satisfaction with products or services. This definition is largely consistent. Fornell (1992) developed the Swedish Customer Satisfaction Barometer (SCBS), which at the time comprised more than 100 businesses and was the first nationally significant model of customer satisfaction. Following this, based on SCSB research, Fornell et al. (1996) introduced the American Customer Satisfaction Index (ACSI), which is based on causal relationships. The European Customer Satisfaction Model (ESCI) has introduced the dependent variable "corporate image" in place of "customer complaint" due to variations in national conditions, such as the more extensive customer complaint system in Europe. Gray correlation analysis (GCA), important performance analysis (IPA), and service quality evaluation (SERVQUAL) are common techniques for gauging customer satisfaction. The SERVQUAL approach was utilized by Balinado et al. (2021) to identify the variables influencing customer satisfaction with Toyota Damarinas Cavite, Philippines after-sales service.

Secondly, a multitude of factors exert influence on the level of customer satisfaction. Hotel guests' impression of service quality is influenced by two key dimensions: "personal contact" (responsiveness and empathy) and "service performance" (reliability and assurance) (Al-Zaidi, 2012). Bafna et al., (2016) extracted and clustered keywords from comment texts using TF-IDF and K-means algorithms, and they found 10 main characteristics that influence hotel customer satisfaction. Tourists may select locations that offer a pleasant environment in order to optimize pleasure, since the environment has a big influence on consumer satisfaction. By implementing renewable energy, hotels in Southeast Asian nations can enhance their offerings and draw in more reservations (Robin et al., 2017).

Research on service quality is being done in both theoretical and applied domains (Mary et al., 2023). The meaning of service quality is typically determined by how customers perceive their experiences, which may be further broken down into the discrepancy between perceived and expected levels of service quality (Grönroos, 1984). The SERVQUAL model is one of the most popular among them. In order to achieve a comprehensive level, this model—which was developed by Karim (2020)—subdivides service quality from five dimensions: tangibility, reliability, responsiveness, assurance, and empathy.

Due to the inability to fully unify customer needs, expectations, perceptions, satisfaction, and loyalty to different star rated hotels vary depending on their characteristics. This is evident in the research on the structure and system construction of employee service quality based on network evaluation data (Park & Jeong, 2019). For travelers choosing between luxury and budget hotels, convenient transportation, food and beverage service, ease of access to locations, and value for money are all highly significant considerations. Although customers focus a lot on the size of the room, the decorations, the mattresses, and the reception services, their satisfaction levels are poor (Li et al., 2013). In hotel contexts, El-Adly (2019) investigated the perceived value dimensions of reputation and aesthetics using structural equation modeling (SEM). These aspects do not significantly positively influence customer satisfaction and loyalty. Customer satisfaction fully mediates the association between perceived pricing justice and customer loyalty, while it somewhat mediates the relationship between perceived service quality and customer loyalty. Owing to the subjectivity and relativity of online assessments, an interactive framework for gauging and rating hotel patron satisfaction can be established by applying emotional analysis to them (Gang & Chenglin, 2021).

## HYPOTHESES DEVELOPMENT

As per the expectancy confirmation theory, the degree of customer satisfaction is ascertained by contrasting the pre-purchase expectations regarding the quality of products and services with the post-purchase perception of consumption. When a customer's perceived quality surpasses their expectations, they are extremely satisfied. They are not satisfied if they are not (Oliver, 1980). But as customer satisfaction depends on service quality, this theory's particular conceptualization is more suited for service quality models (Sureshchandar et al., 2002). Diverse academics possess varying perspectives regarding the factors that influence overall pleasure. Infrastructure is the first factor that influences consumer satisfaction, and tangible items are the main source of this satisfaction (Wu & Ko, 2013). The proportional impacts of safety equipment, entertainment options, and safety precautions on consumer pleasure during the pandemic and, later, on consumer behavior intentions (Kim et al., 2023). When evaluating room, location, cleanliness, service, and value as hotel features, Chinese tourists are more likely than international tourists to place a high value on room-related hotel attributes; in contrast, foreign customers usually prefer service over room (Liu et al., 2017). According to Li et al. (2017), smart tourism technology is crucial for raising customer satisfaction. Customer satisfaction and hotel Wi-Fi speed are significantly correlated, and they both have an impact on the hotel's reputation through electronic word-of-mouth marketing, or eWOM, which includes online rating and sharing (Grechyn & McShane, 2021). As a result, we recommend making the following assumptions:

**H1:** The quality of accommodation infrastructure influences customer satisfaction positively.

In addition to the hotel's infrastructure, location conditions can also affect customer booking decisions and customer satisfaction (Shoval et al., 2011). This includes geographical location and transportation conditions. A favorable geographical positioning, such as a hotel near a scenic area, is more likely to attract tourists to visit, saving customers' time and energy on their travels. In contrast, hotels with poor geographical locations often suffer from inconvenient travel and may be more likely to cause customer dissatisfaction. Superior location conditions play an important role in expanding hotel market share and improving enterprise market competitiveness, which is why well-known chain hotels tend to choose areas with convenient transportation and superior location.

**H2:** The quality of location conditions has a positive impact on customer satisfaction.

According to Oliver (1980), the components of service quality, as per the triple attribute measurement approach are service products, service delivery, and service environment. Customers and staff engage in highly interactive processes when consuming hotel products and these interactions frequently involve service-critical moments. These pivotal points in the servicing process are the source of customer complaints regarding their experiences. This includes hotel services including room service, the check-in procedure, the luggage transfer process, and the problem-solving abilities of the front desk staff (Hartline et al.,2003). The hotel employees, especially those at the front desk, play a crucial role in shaping guests' initial perceptions of the establishment, reflecting the overall image of the hotel. The quality of service delivered by the staff directly influences the hotel's revenue. Customer perception is heavily influenced by the quality of service provided by hotel staff, and defining service quality should be guided by customer needs. Understanding client wants and promptly attending to their concerns can improve customer satisfaction and loyalty while also boosting the reputation of the product. On the other hand, there is a discrepancy in the quality of employee services, which has an impact on customer satisfaction, when there is a mismatch between the service provided by employees and the actual cognition supplied by customers, or when service staffs are unable to effectively comprehend client wants (Ratnasari et al., 2022).

**H3:** The quality of employee services has a positive impact on customer satisfaction.

A hygienic environment, both inside and outside the hotel, is an important consideration for customers, including the hygienic quality of food, cleanliness of rooms, bathrooms, dining areas (Darko et al., 2015). Whether the restaurant utensils are clean and tidy, and whether the public areas are clean and comfortable are all important standards to measure the quality of the hotel's health. A good hygienic environment can not only improve guest satisfaction, but also reduce the risk of disease transmission and ensure the health and safety of guests.

**H4:** Hotel hygiene quality has a positive impact on customer satisfaction.

The determining factors of overall customer satisfaction include the perception of product and service attributes. High performance in certain areas improves overall customer satisfaction, while low performance reduces overall customer satisfaction. The determining factors of customer satisfaction and dissatisfaction are influenced by different characteristics, such as the composition of tourism groups (Xu, 2018). The determining factors of customer satisfaction include location (these two words are removed), the quality of employee service, whether food is safe, and the physical properties of the hotel and room. The determining factors of customer dissatisfaction include low hygiene quality, poor language skills of employees, etc. (Zhou et al., 2014).

**H5:** There is no difference between the product and service attributes that lead to customer satisfaction or dissatisfaction.

## DATA ANALYSIS

### Data

We collected customer review data from the popular hotel booking website www.ctrip.com.
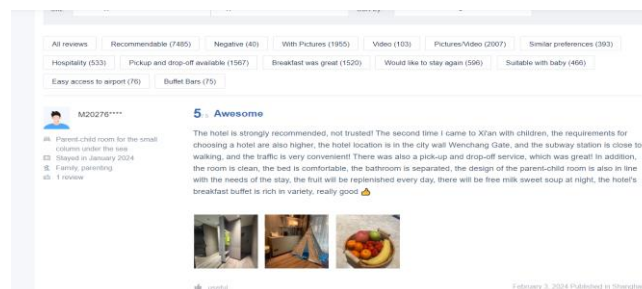


**Figure 1: Screenshot of the website**

This website only allows screenshots of comments from customers who have stayed at hotels on www.ctrip.com. Book and post reviews through ctrip.com. The advantage of choosing this online booking website is that it requires customers to publish positive and negative reviews as text, and requires customers to provide ratings, as shown in Figure 1. This allows us to separately examine the level of user satisfaction and the determining factors of customer satisfaction and dissatisfaction.

Customers find it relatively easy to determine the location conditions of a hotel, mainly due to several key factors that together facilitate a convenient and efficient selection process. Firstly, customers usually consider booking hotels while searching for tourist attractions and this behavior pattern closely links the hotel selection process with tourism planning. During this process, the hotel's geographical location became one of the core factors in customer decision-making. Customers tend to choose hotels that are close to or easily accessible to tourist attractions in order to maximize their travel experience.

In addition, customers may also search for nearby tourist attractions based on their current geographical location and choose hotels with suitable geographical locations. This search and selection model based on geographical proximity further highlights the importance of location conditions in the hotel selection process.

Meanwhile, transportation conditions, especially the distance between hotels and major transportation hubs such as subway stations, are important considerations for customers when choosing hotels. These pieces of information are usually clearly listed in hotel recommendation lists, providing clear and intuitive references. For example, a hotel recommendation list would clearly indicate that a hotel is only a few hundred meters away from the nearest subway station, which is extremely important for passengers who tend to use public transportation.

**Table 1: The List of chosen hotels in Xi'an**

| Number | The Names of hotels |
|--------|---------------------|
| 1 | Qiyue Hotel |
| 2 | Man Xin Hotel Xi'an Gate Tower South Gate |
| 3 | Xi Zhi Yue Hotel |
| 4 | Yunheyebo Hotel |

We collected online customer reviews from four hotels in Xi'an that did not have obvious duplicate or false reviews. Their names are shown in Table 1. For each hotel, we generate 7 different random numbers from 1 to 30 as indexes and rank them according to the order in which they appear in the comments posted on the hotel website, collecting corresponding index comment data and distribution of hotel reviews in xi'an shown in Figure 2. Then, we excluded samples without any text entries on the front or back, resulting in 3872 comments, including 3445 5-point comments (89%), 242 comments from quarter comments, 93 three-point comments, 38 two-point comments, and 54 one-point comments.
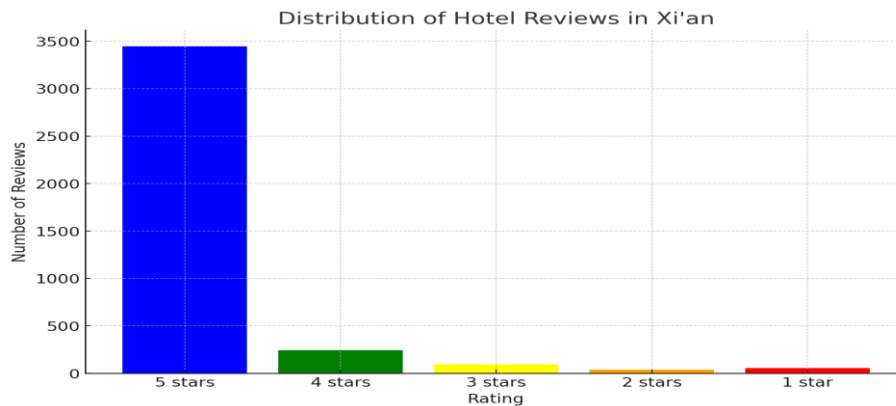


**Figure 2: Bar chart of hotel reviews with different ratings**

## Data Analysis

In order to thoroughly investigate and precisely assess customer satisfaction evaluation indicators in Xi'an hotel industry, the researchers investigated an advanced natural language processing technology that combines BERT and Generative Pre-trained Transformer (GPT). Our approach

emphasizes context and sensitively capturing subtle semantic relationships in addition to focusing on extracting semantic information from network evaluation texts. This is important for a thorough understanding and analysis of consumers' attitudes and perceptions regarding the quality of employee services. Three primary processes comprise the technique of this study: preprocessing the data, text vectorization, topic modeling, and sentiment analysis.

Data preprocessing and text cleaning: to eliminate terms that have no meaning, including stop words, the first steps involve preprocessing and cleaning data using data processing software. Furthermore, the GPT model was creatively used in this study to create a corpus. We may produce customized comment predictions for particular areas of service quality by embedding the keyword prompt into the GPT model. This ensures that the BERT model's training set is rich and highly linked.

Text vectorization processing: This study turns cleaned text into vector form by using the BERT model's embedding function. This transformation process not only guarantees that words can be fully captured in their contextual meaning, but it also means that, in addition to taking term frequency (TF) into account during feature vector extraction, we also carefully examine word distribution across various comments, leading to a more accurate semantic classification.

Topic model analysis and sentiment analysis: Using produced comment predictions; we were able to find texts associated with important service quality factors. We next used the BERT model to do a thorough sentiment analysis. This study's sentiment analysis fully takes into account the emotional hue and tone intensity in the context in addition to the vocabulary's positive and negative connotations. Lastly, the BERT model was used to determine the intensity of user assessments as well as the association between user evaluations and hypothetical factors. Figure 3 show the correlation matrix that is the final outcome.
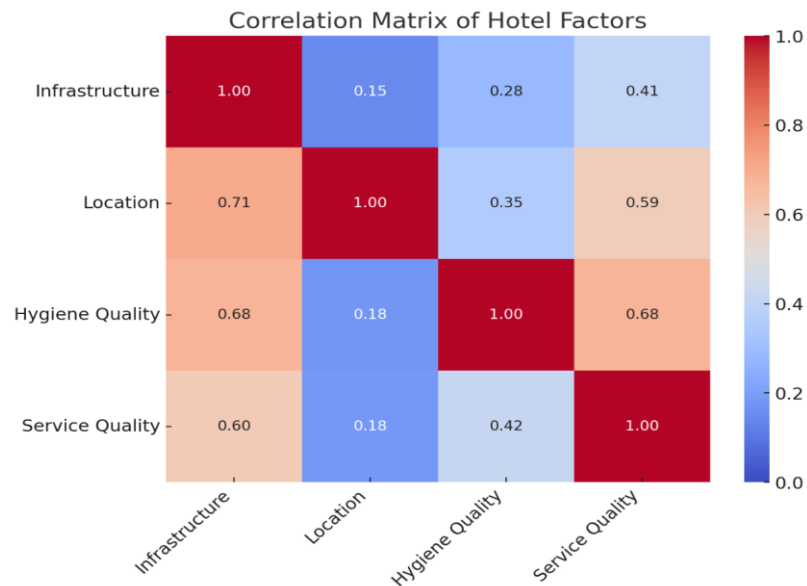
The following figure displays the final outcome:



**Figure 3: Correlation matrix**

There is a strong positive correlation between hotel infrastructure, such as room and public area equipment, and customers' perceptions of the quality of the services they receive. The correlation coefficient between infrastructure and service quality is 0.41/0.68. This could imply that enhancing infrastructure can greatly enhance the assessment of service quality.

Geographic location and infrastructure have a strong link with each other: the correlation coefficients for the two variables are 0.71 and 0.59, respectively, and indicate the importance of these relationships. This highlights the significance of location in assessing customer satisfaction since it shows that location influences customer decisions directly and is also strongly associated with other aspects of the hotel, such infrastructure and service caliber.

Significant evidence exists for the relationship between health and service quality; their correlation coefficient, which is the highest of all the factors, is 0.68/0.42. This highlights how crucial good hygiene is to customer satisfaction and shows how customers' perceptions of service quality are influenced by hygiene standards.

## DISCUSSION

### The Correlation Between Hotel Product and Service Attributes and Customer Satisfaction

According to our findings, Hypotheses 1, 2, 3, and 4 are accepted. The data analysis reveals a positive correlation between customer satisfaction and the following factors: employee service quality, location circumstances, health quality, and accommodation infrastructure. Infrastructure related to lodging, in particular, has grown to be a significant component influencing both customer satisfaction and dissatisfaction as it is one of the primary factors for hotels to draw guests. Customer satisfaction and the quality of their lodging are directly impacted by the infrastructure of lodging being fully operational. Examples of critical metrics that clients use to assess the hotel's infrastructure include the comfort level of the room, the caliber of the bed, the availability of hot water, the coverage of Wi-Fi, etc. This finding demonstrates that one of the core roles of hotels is to accommodate guests, with the provision of reliable and comfortable lodging being the most crucial requirement (Chang et al., 2019). As a result, the correlation between lodging infrastructure and the other influencing elements is always the largest when examining the association between different product and service features.

The ease of mobility has a direct impact on the comfort and efficiency of travel for tourists, business travelers, and transit travelers (Virkar & Mallya, 2018). Hotels that are close to major hubs for public transit, such subway and high-speed rail stations, can significantly reduce travel time and energy costs for its patrons. This can have an impact on the guests' overall impression of the hotel and their likelihood of returning. However, in some tourist cities, hotels will take the local climate into account when choosing a location. For example, in hot climates, picking locations near water sources or the beach can better satisfy the needs of visitors (Belias et al., 2022).

Customers will assess service quality based on the connection between actual employee services and their needs since service quality is defined as the capacity to have a close relationship between consumer purchasing desire and actual service execution (Zeithaml, 2000). The manners, professionalism, attitude, abilities, and efficiency of hotel staff are the primary indicators of their level of service quality. According to Vuji et al. (2020), the demand for services in the hotel business is steadily rising due to the economy's rapid development. Hotel staff members must expect greater standards of professionalism in this fiercely competitive market and provide more professional services to fulfill the needs of guests in order to raise the caliber of hotel employee services and create favorable conditions for customer satisfaction.

As living standards continue to rise in today's society, individuals are becoming more and more concerned with their personal health in addition to their essential needs. Even if hotel rooms are a private area for visitors to rest, the experience of visitors is substantially diminished because daily check-in numbers are essentially variable. Multiple guests sharing a room and a bed will significantly lower the quality of the customer's experience, even if they don't clean everything. A spotless bathroom and a neat bedroom will unconsciously raise the hotel's rating in the eyes of guests. Health security is included in the second tier of Maslow's hierarchy of requirements theory

(Benson & Dundis, 2003). People will require safety once their most basic demands for housing have been satisfied. Customers should have similar hygiene needs when it comes to hotels, even if budget hotels typically have more limited facilities and services due to their comparatively low pricing as compared to mid- to high-end and luxury hotels (Jiang et al., 2024)

## The Correlation Between Product and Service Attributes and Customer Satisfaction and Dissatisfaction

The accommodation infrastructure is the determining factor of customer satisfaction, as per the findings of the correlation matrix presented in Figure 3. In contrast, site circumstances are the primary determinant of consumer unsatisfaction, followed by lodging infrastructure and health quality. In actuality, employee service quality has the least effect. This finding supports the theory of inconsistent expectations since various customers have varied requirements and expectations from hotels and different hotels respond differently to those demands. As a result, consumers may be less or more satisfied with different aspects of the hotels' offerings. Meanwhile, this result completely rejects hypothesis 5. According to the two factor theory, the basic component and the motivational element—have an impact on a person's level of satisfaction and satisfaction with something (Alshmemri et al., 2017). Travel fatigue is a major factor that impacts customer dissatisfaction, and the disadvantages of inconvenient transportation and being too far from tourist attractions included in the location conditions lead to accommodation infrastructure being the basic factor, or the minimum requirement that must be met, for hotels where the vast majority of customers are dissatisfied. Hence, by using this as a guide, hotels can enhance customer satisfaction and service quality by focusing on the areas where their own online evaluations show the greatest degree of dissatisfaction.

## Implications

### Theoretical Implications

There is substantial theoretical relevance to this finding. First off, the study's findings validate the service quality assessment model, which breaks down quality assessment into five categories: assurance, tangibility, responsiveness, empathy, and reliability. This effectively establishes that the difference between service performance and expectations serves as a proxy for service quality.

Second, by breaking down online comment content into many dimensions for research, this study offers a novel technique in comparison to regression analysis, AHP, and other methodologies. A model for evaluating customer satisfaction is developed by contrasting the effects of lodging infrastructure, location circumstances, employee service quality, and health quality on positive consumer satisfaction, along with the relationship between the product and service features offered by hotels. According to this study, among the factors that influence customer satisfaction, problems with the infrastructure of the accommodations and the quality of the services provided are more likely to be mentioned when location conditions are present; however, the likelihood of mentioning location conditions decreases when other factors are mentioned.

Additionally, the BERT model shows greater superiority and practicality in text classification when compared to the LSTM and fast text models. Consequently, the BERT model, which has robust language representation and feature extraction capabilities, serves as the foundation for this investigation. Higher precision in sentiment analysis is achieved by obtaining the emotional tendencies of user comments by recognizing the entities of opinions and evaluators. Moreover, the process of semantic analysis involves the extraction of information from online comments, which summarizes the characteristics of products and services that impact customer satisfaction and indicates the degree of association between these aspects and satisfaction.

**Managerial Implications**

Online reviews, or customer evaluations and comments after a purchase or service is enjoyed, are an electronic version of word-of-mouth marketing. Reading past reviews can assist other customers in making judgments when they perceive significant shopping risks. Customer satisfaction may be further impacted by the length and depth of online reviews, which may influence future expectations for the hotel's level of customer care. If the writing is too lengthy, the customer might not want to read it through to the end; conversely, if it is too brief or has too little information, the consumer might start to doubt the validity of the assessment. In a study on the "most helpful" internet comments, Lutz et al. (2022) discovered that people considered medium-length, low-rated, neutral, or negative arguments to be the most helpful. In order to get a more accurate assessment of the caliber of employee services, this study chooses text comments for analysis and discussion that have a strong correlation with the features of the products and services.

The factors of customer dissatisfaction were examined in this study because they are significantly more influential than the determinants of consumer contentment. This analysis is used to identify potential causes of customer discontent in each of the four aspects. Based on these findings, improvement techniques and recommendations are suggested. Of course, human management and hotel management are inextricably linked, and the discrepancy in service delivery is the actual service quality that employees produce vs the requirements for service quality. This is caused by either the insufficient application of service quality standards by service persons or the discrepancy between the actual and expected levels of service quality supplied by service workers. Hotels should use the pertinent service attributes in customer reviews as a guiding principle for improvement, given the impact of employee service quality on positive customer satisfaction, in order to improve customer satisfaction overall and increase the hotel's competitiveness in the market.

This study offers hotel managers a novel method for assessing the relationship between employee service quality and customer satisfaction by statistically analyzing online review data using the BERT model. This approach offers an additional benefit for managers and does not require the lengthy distribution and collection procedures of conventional questionnaire surveys. The outcomes of service quality evaluations can be used by managers to pinpoint issues and their root causes with a particular good or service. When resources are scarce, areas where gaps in consumer perception still exist might be found by consulting the outcomes of the service quality assessment. They can identify the aspects of the services that require enhancement as well as the best order to optimize each aspect, allowing the hotel to use its resources sensibly.

## CONCLUSIONS AND FUTURE EXTENSIONS

### Conclusions

The researchers investigated and compared the effects of four different product and service categories—accommodation infrastructure, location conditions, employee service quality, and hygiene quality—on customer satisfaction positively as well as the correlations between different factors using the BERT model and correlation analysis. According to research statistics, there are asymmetrical characteristics in the components that influence consumer satisfaction and dissatisfaction. Customer satisfaction is typically correlated with accommodation infrastructure and location factors are significant when customer discontent is high. Furthermore, we discovered that there is a lower association between site conditions and hygiene quality variables, even if consumers are more likely to express service quality issues when they are unsatisfied with their accommodations' infrastructure. This indicates that several scales are used to measure consumer satisfaction and dissatisfaction.

**Future Extensions**

We can further our investigation in the future by looking into the following areas. Initially, our study focuses on modeling customer assessment data from the predominant local hotel reservation system in Xi'an, a prominent tourist destination. However, it is important to acknowledge that this approach may limit the generalizability of customer satisfaction preferences derived from this research technique. Therefore, to ensure the provision of suitable accommodations catering to diverse guest needs and to facilitate the prudent allocation of hotel resources, future research endeavors could expand their scope. Specifically, additional emphasis can be placed on examining hotel reviews from different regions, identifying similarities among customer groups across various locales to refine the model, and pinpointing the factors influencing customer satisfaction based on the distinctive characteristics of hotels in diverse regions.

Next, hotel types can be further subdivided based on several factors including hotel star rating, chain status, and hotel social image in order to investigate how product and service features affect customer satisfaction. Plans for targeted improvements might be given to hotels with various characteristics.

The following areas are where research methodologies can be improved. First of all, we removed emoticons and special characters from the text during the data preprocessing step since we were unable to identify and examine them. Nonetheless, certain emoticons might better complement or modify the text's tone and emotions in today's online vernacular. A grin, for instance, can represent feelings of contentment and enjoyment, but tears typically represent feelings of loss and melancholy. Consequently, in order to lessen the bias in sentiment analysis results, we can process emoticons and special characters in future research. Additionally, in order to choose decision information that is more beneficial for customers, the Help-LDA model applies various weights based on the usefulness of comments for text topic extraction. In addition, it can accurately extract from online comments for merchants the real relationship between the attributes of their products and services.

Semantic similarity can be calculated more precisely by the sem2vec model. Ultimately, text sentiment analysis can eventually transition from using a single BERT model to a BERT fusion model. In order to increase model accuracy, input characteristics such as TF-IDF, Word2Vec, comment word count, and sentiment score can be employed. For instance, the classification outcomes of BERT and RF can be weighted and added based on their accuracy.

**Submission Declaration Statement:** We hereby confirm that the manuscript has no any actual or potential conflict of interest with any parties, including any financial, personal or other relationships with other people or organizations within three years of beginning the submitted work that could inappropriately influence or be perceived to influence. We confirm that the paper has not been published previously, it is not under consideration for publication elsewhere, and the manuscript is not being simultaneously submitted elsewhere.

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