

Digital Information Systems in Hospitality: A Comparative Study of User Feedback and Rating Mechanisms Across Booking Websites

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ABSTRACT

The rapid adoption of digital information systems has transformed the hospitality industry, particularly in the way hotel ratings and customer reviews influence consumer decision-making. This study examines the role of digital information systems in shaping user perceptions, trust, and booking behavior through online hotel rating and review mechanisms [12]. Focusing on major hotel booking platforms, the research explores how star ratings, customer reviews, sorting options, and interface design impact user experience and satisfaction [11]. A mixed-methods approach is employed, combining quantitative analysis of user interaction patterns with qualitative insights derived from customer feedback and platform features. Rather than proposing new algorithmic models, this study offers a comparative, interface-oriented evaluation of how review presentation, sentiment visibility, and booking model types affect user engagement and trust. The findings reveal that clear information architecture, accessible review content, and intuitive sorting mechanisms significantly enhance user confidence and decision quality. Additionally, the study highlights the importance of sentiment polarity and review transparency in shaping consumer perceptions of hotel quality. By emphasizing the interaction between digital interface design and information presentation, this research contributes to a deeper understanding of digital transformation in the hospitality sector. The results provide practical implications for hotel managers, platform developers, and industry stakeholders seeking to design user-centric digital information systems that foster customer satisfaction, trust, and long-term loyalty.

Keywords:- Digital Hospitality, Hotel Rating System, Customer Reviews, User Feedback, Decision Support Systems, Web-Based Platforms

I. INTRODUCTION

Digital platforms have become an essential part of the hospitality industry, significantly influencing how consumers search for information, evaluate alternatives, and make hotel booking decisions [10]. With the rapid growth of online booking websites and review platforms, customers increasingly rely on digital information systems such as star ratings and online reviews to assess hotel quality before making reservations [11]. These digital indicators now play a critical role in shaping customer perceptions, trust, and overall satisfaction. Hotel star ratings and customer reviews serve as valuable feedback mechanisms for both consumers and hotel managers. For customers, reviews provide firsthand insights into service quality, amenities, cleanliness, and overall experience, helping them reduce uncertainty and make informed choices [1]. For hotel managers, online feedback offers an opportunity to understand customer expectations, identify service gaps, and improve operational performance. As a result, online ratings and reviews have become an important decision-support tool in the hospitality sector. The influence of online reviews has grown substantially in recent years, with studies showing that a large majority of consumers read reviews before booking a hotel. Many travelers avoid hotels that lack reviews, while others place greater trust in hotels with a higher number of positive ratings. Reviews not only reflect customer satisfaction but also directly impact hotel reputation, booking performance, and competitiveness in the market. Consequently, online reviews act as an intermediary between customers and service providers, facilitating transparency and accountability. To address this gap, the present study examines hotel ratings and customer reviews across multiple popular booking platforms, including Booking.com, Agoda, Almosafer, TripAdvisor, and Google Maps. The research analyzes how differences in platform design, sorting mechanisms, and booking models influence hotel ratings, sentiment

scores, and customer trust [13]. By adopting a comparative, multi-platform approach, this study contributes to a deeper understanding of how digital information systems shape consumer behavior in the hospitality industry and offers practical insights for designing more user-centered review systems

II.LITERATURE REVIEW

Existing studies show that online star ratings and customer reviews strongly influence hotel selection and booking decisions in the hospitality industry. Research highlights the importance of review sentiment, credibility, and visibility in shaping consumer trust and satisfaction [1]. While most studies focus on review content and overall ratings within single platforms, limited research examines the role of interface design features such as review sorting mechanisms and booking models. This gap indicates a need for comparative, multi-platform analysis to better understand how digital information systems influence consumer behavior in hotel booking contexts [12].

Rating–Sentiment Consistency Analysis

In many cases, inconsistencies are observed between star ratings and the sentiment expressed in review text. A high star rating may be accompanied by negative feedback, or a low rating may contain positive remarks [3]. To overcome this issue, the proposed system analyzes the textual sentiment of reviews and compares it with the corresponding star ratings. Reviews exhibiting significant mismatch are flagged, enabling users to identify potentially misleading feedback. This mechanism enhances transparency and improves trust in the review system.

Intelligent Review Summarization

Given the large volume of reviews available on booking platforms, users often experience information overload. The proposed system incorporates an intelligent review summarization feature that automatically extracts key positive and negative aspects from multiple reviews [12]. By presenting concise summaries of strengths and weaknesses, the system allows users to quickly understand overall hotel performance without reading extensive review content.

Personalized Review Sorting Mechanism

Most booking platforms apply a uniform default sorting mechanism for all users, which may not align with individual preferences. The proposed system introduces personalized review sorting, allowing users to prioritize reviews based on their specific interests such as recency, negative feedback, safety concerns, or overall sentiment [6]. This adaptive sorting approach improves user satisfaction and supports more relevant decision-making.

Trust-Based Review Scoring

To enhance the credibility of customer feedback, the system assigns a trust score to each review. This score is calculated using multiple factors, including review length, reviewer activity, booking verification, sentiment–rating consistency, and review freshness. Reviews with higher trust scores are highlighted, while low-quality or potentially biased reviews are deprioritized [7]. This feature strengthens confidence in the displayed information.

Review Freshness Evaluation

Service quality in the hospitality industry can change over time, making older reviews less reliable. The proposed system evaluates the temporal relevance of reviews and categorizes them based on freshness [3]. Recent reviews are given greater importance in rating aggregation and sentiment analysis, ensuring that users receive up-to-date and relevant insights.

III.PROPOSED STUDY

The proposed study focuses on improving how hotel ratings and customer reviews are analyzed and presented on online booking platforms. Instead of relying only on star ratings, the study combines rating analysis with sentiment analysis of customer reviews to provide a more accurate understanding of user experience. The system compares reviews across multiple booking platforms to identify variations in ratings, sentiment, and trust levels. It also examines the impact of different review sorting mechanisms on user perception and decision-making [6]. Additional features such as rating–sentiment mismatch detection and review trust evaluation are introduced to reduce misleading information. The study aims to enhance transparency, reduce confusion caused by information overload, and support confident booking decisions. Overall, the proposed approach helps users make better choices and assists service providers in improving customer satisfaction [5].

Cross-platform ratings are consistent – Most platforms show similar hotel ratings, regardless of verified bookings. Reviews affect decisions – Consumers pay attention to positive and negative comments; culture and behavior influence ratings. Choice overload matters – Too many options reduce confidence and satisfaction; limiting options or filters helps. Sorting and presentation influence choices – How reviews and products are displayed (sorting, filters) guides decisions [7]. Review helpfulness is key – Helpful reviews, often

predicted by deep learning or text analysis, strongly affect purchase intent.

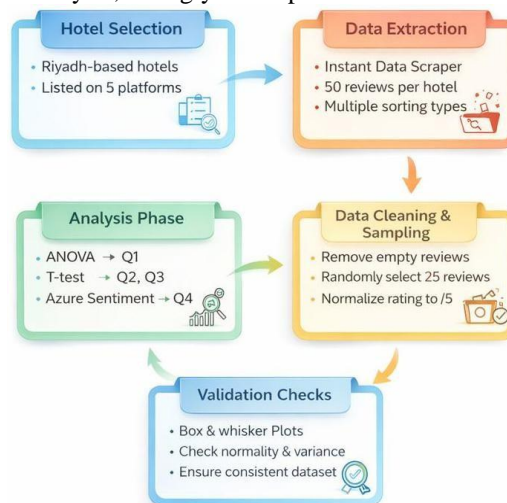


Fig. 1. Proposed Methodology for Hotel Review Sentiment Analysis

A. Methodology

Data Collection

In this project, data is collected from multiple online hotel booking platforms to analyze customer ratings and reviews. Only hotels that are listed on all selected platforms are included to ensure fair comparison. The data collection process focuses on both star ratings and written customer feedback [9]. Reviews are collected within the same time period to avoid changes due to service updates or seasonal effects. This helps maintain consistency across platforms. The collected data provides both numerical and textual information. This forms the base for further analysis in the project [8].

Data Cleaning and Preparation

After data collection, the dataset may contain empty, repeated, or irrelevant reviews that can affect analysis accuracy. These unwanted entries are removed during the data cleaning process. Ratings from different platforms are converted into a common five-star scale to ensure uniformity. Text reviews are formatted properly by removing unnecessary symbols and spacing issues [15]. This step improves the quality of sentiment analysis. Clean and structured data ensures reliable results. Proper data preparation increases the overall performance of the system.

Review Selection

Users generally do not read all available reviews before making a booking decision. To reflect real user behavior, a fixed number of reviews are selected for analysis. In this project, twenty-five reviews per hotel are chosen randomly. Random selection helps reduce bias in the dataset [8]. This approach keeps the analysis simple and manageable. The selected reviews represent both positive and negative opinions. This step ensures realistic and practical evaluation of customer feedback.

Rating Analysis

Hotel ratings collected from different booking platforms are compared to identify variations. This analysis helps understand how the same hotel can receive different ratings across platforms. Statistical methods are used to determine whether these differences are meaningful. The effect of booking type, such as direct or indirect booking, is also examined [7]. This comparison highlights platform-level differences in rating systems. Rating analysis helps identify reliability issues. It supports better decision-making for users.

Sentiment Analysis

Sentiment analysis is applied to customer reviews to understand customer opinions in detail. Each review is classified as positive, negative, or neutral based on its content. This allows the system to capture customer emotions beyond star ratings. Sentiment scores provide a deeper understanding of satisfaction levels. This analysis helps identify common complaints and positive experiences [5]. It improves interpretation of customer feedback. Sentiment analysis enhances the intelligence of the system.

Sorting Mechanism Comparison

Different review sorting mechanisms, such as default and alternative sorting, are analyzed in this project. Ratings and sentiment scores are compared across these sorting options [15]. This helps identify whether review

order influences user perception. Sorting mechanisms play an important role in how users interpret information. The analysis evaluates whether default sorting introduces bias. Understanding sorting effects improves interface design. It supports the development of user-friendly platforms [16].

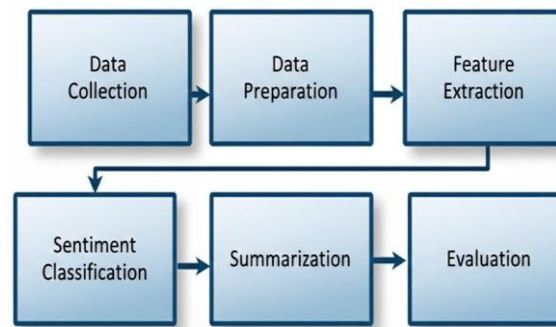


Fig.3. Workflow of Sentiment Analysis and Text Summarization

IV.RESULT ANALYSIS

Hotel Ratings Across Different Websites

The analysis shows that the same hotel receives different ratings on different booking websites. This happens because each platform has different users, review policies, and verification methods. Some platforms allow only verified guests to give reviews, while others allow open reviews. Cultural background and geographic reach of users also influence ratings [9]. Statistical analysis confirmed that rating differences across websites are significant. However, these differences do not always mean better or worse service quality [8]. Other hidden factors may also affect the ratings. Overall, platform design plays an important role in rating variation.

Direct Booking vs Indirect Booking Websites

The comparison between direct booking and indirect booking platforms revealed mixed results. Ratings on Google Maps were found to be significantly different from those on Booking.com and Almosafer. However, TripAdvisor ratings did not show major differences when compared with other platforms. This indicates that booking type alone does not fully determine rating differences. Although statistical differences were observed, the practical impact on user decisions may be small [15]. Users may still perceive hotels similarly despite rating variations. Therefore, booking model affects ratings but is not the only influencing factor.

Effect of Sorting Mechanism on Hotel Ratings

The impact of review sorting mechanisms on hotel ratings was also analyzed. Results showed that default sorting and alternative sorting methods generally produce similar average ratings. In most cases, changing the sorting order did not significantly change the hotel rating [8]. This suggests that sorting mechanisms do not manipulate rating outcomes. Users receive consistent rating information regardless of sorting choice. Hence, rating reliability remains stable across sorting options. Sorting mainly affects review visibility, not rating value.

Effect of Sorting Mechanism on Customer Sentiment

Sentiment analysis results showed that customer opinions remain mostly unchanged across different sorting mechanisms [15]. Most hotels did not show significant differences in sentiment scores between default and alternative sorting. This indicates that review order does not strongly influence overall customer sentiment. One exception was observed for a specific hotel on Google Maps, where sentiment varied slightly [16]. However, such cases were rare. Overall, customer emotions and opinions are consistent regardless of how reviews are sorted.

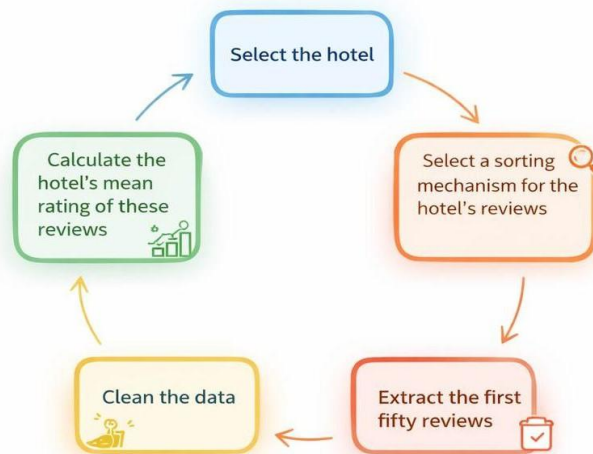


Fig.2. The steps followed to answer the third question.

V.CONCLUSIONS AND FUTURE SCOPE

This project studied how hotel ratings and customer reviews are presented on different online booking platforms and how they influence user decision-making. The results show that the same hotel can receive different ratings on different websites due to variations in platform design, user behavior, and review policies [9]. However, the study found that review sorting mechanisms do not significantly affect customer sentiment or overall hotel selection. This means users generally form similar opinions regardless of how reviews are sorted. The findings highlight that digital platforms play an important role in shaping trust and transparency [16]. Overall, the study confirms that well-designed review systems help users make informed and confident booking decisions.

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