

The Impact of Social Media Data Mining on Enhancing Customer Satisfaction in Macau's Hotel Industry

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Abstract. In the digital era, social media platforms have become indispensable tools for communication, marketing, and consumer engagement, especially in the travel and hospitality industry. This study examines how social media data mining techniques, including text mining and sentiment analysis, can be applied to uncover the drivers of customer satisfaction within Macau's competitive hotel sector. Leveraging theoretical frameworks such as SERVQUAL and the Kano model, the research identifies key factors influencing guest satisfaction—such as cleanliness, service speed, pricing, and environment—and demonstrates how real-time social media insights enable hotels to promptly address service shortcomings and tailor their offerings. This proactive approach not only enhances customer satisfaction but also fosters loyalty and positive online word-of-mouth, crucial for sustaining competitive advantage. The study also highlights the potential of social media analytics to detect emerging trends, supporting hotels in adapting to evolving customer needs. However, limitations include reliance on secondary data and the specific regional focus on Macau, which may affect the broader applicability of findings. Future research is encouraged to incorporate mixed-methods and cross-regional comparative studies to validate and deepen the insights from social media data mining in hospitality management.

Keywords: Social media data mining, customer satisfaction, Macau hotel industry, sentiment analysis.

1. Introduction

In this age of digital technology, social media are tools that cannot be substituted as they are helpful for communication, marketing and consumer engagement. In the travel and hospitality industry, platforms such as TripAdvisor, TikTok, Booking.com etc., allow travelers to share detailed reviews, ratings and experiences. These can influence other consumers' decisions [1]. There is a lot of content that is user-produced that gives businesses a great opportunity to find out what their customers like and how satisfied they are.

Macau, as one of Asia's most competitive tourism destinations, features a hotel industry marked by high-density luxury resorts, casino hotels, and international chains. The Macau Government Tourist Office (MGTO) reported that in 2023, the city had about 28.23 million visitors, and hotel room occupancy in July was 89.4 percent [2]. The average adequacy rate in December last year was

82.3 percent [2]. During the Golden Week, 94.5 percent of rooms were occupied [2]. This indicates that the industry is rebounding strongly and shows that competition is fierce.

Customer satisfaction is important. It determines whether a hotel will do well in the long run. It changes customer loyalty and the hotel's revenue. It changes the way people perceive it online [3], as which the older methods of getting feedback are the same. For example, post-stay surveys. Hotels often miss opportunities, and they do not immediately understand how the guest feels, and they do not know all the details. Social media data mining uses tools such as text mining and sentiment analysis. Hotels can view a large amount of real-time, from which they can understand it better, they see what the service is like and what guests want. This paper aims to explore how social media data mining can be applied to uncover the drivers of customer satisfaction within Macau's hotel industry. Drawing on theoretical models such as SERVQUAL (reliability, assurance, tangibles, empathy, responsiveness) and the Kano model, this research seeks to establish a practical analytical framework that connects digital consumer behavior with actionable hotel service improvements.

2. Literature review

2.1. Social media data mining techniques

Data mining is basically discovering hidden patterns and knowledge from big data sets. When it comes to social media, there are several techniques that can be used to gain useful insights. These include text mining and sentiment analysis. Text mining is all about extracting useful information. This information comes from unstructured data. For example, customer reviews or social media posts. Sentiment analysis examines the emotions behind the text [4]. These methods work well. They are perfect for viewing large amounts of content produced on websites.

Social media data mining is becoming increasingly important in the hospitality industry. It helps in making strategic decisions. For example, people often check TripAdvisor data. They use it to measure how well a hotel is doing. They go by what customers say in their reviews [5]. Social media platforms provide a lot of customer feedback. Hotels can use these insights to provide better service. They can now adapt to the needs of their customers. They can even guess what people want in the future.

Social media data mining has a great advantage. It can observe customer behavior. Hotels can see how often people interact online. They can check what those interactions are. They can find out what part of the service is most important. For example, how check-in is done. Whether the room is clean. All these affect guest satisfactions. Such analytics provide valuable insights into what matters most to customers. They allow hotels to provide personalized service. They help improve the overall guest experience [6].

2.2. Customer satisfaction theory

Customer satisfaction has long been the focus of research in the hospitality and service industries. Several classical models have been produced. They measure and understand the factors that influence satisfaction. SERVQUAL model was proposed by Parasuraman et al. [7]. It is one of the most widely used frameworks. SERVQUAL identifies five key components of service quality: reliability, assurance, tangible, empathy and responsiveness. These dimensions act as benchmarks. They help in assessing service quality and understanding customer expectations.

The Kano model was produced by Noriaki Kano in the 1980s. It categorizes customer satisfaction factors into three types: basic needs, performance needs, and excitement needs [8]. The model

suggests that satisfying basic needs will lead to customer dissatisfaction if they are not met. Even if they are met, they do not necessarily lead to satisfaction. Performance needs are directly related to customer satisfaction. The Kano model emphasizes the importance of going beyond basic expectations. It is about pleasing customers with unexpected and innovative features.

Customer satisfaction is also closely related to loyalty, word-of-mouth (WOM) communication and branding. Anderson and Srinivasan argue that satisfaction has a strong impact on loyalty [3]. This in turn leads to repeat customers and positive online reviews. Online reviews themselves, as an extension of WOM, directly influence other potential customers' perceptions and purchasing decisions. Numerous studies have found a strong correlation between customer satisfaction and online reviews, reinforcing the importance of addressing guest concerns and improving service quality based on feedback from these platforms [9].

3. Analysis of customer satisfaction in Macau's hotel industry

3.1. Characteristics of Macau's tourism and hotel market

Macau, one of the most famous tourist attractions in the world, is often referred to as the "Monte Carlo of the East". It has a special mixture, in which rich cultural heritage and modern entertainment are part of it. The city attracts millions of tourists every year, most come from China, Hong Kong and Taiwan, and there are also international tourists. In 2023, the Macau Government Tourist Office (MGTO) reported that Macau had about 28.23 million visitors that year [2]. This surge in tourism contributed to a significant recovery in the hotel sector, with overall hotel occupancy rates reaching 89.4% in July and an average of 82.3% in December [2]. It is worth noting that hotels in Macau make more money in 2024 than in previous year, across all categories. Luxury hotels stood out, four-star hotels increased 70% in revenue, and twice as much for five-star hotels [2].

Satisfying customers is key and this helps to stay ahead of the game. Hotels here need to meet the needs of their customers, they need to serve them, and they need to provide an outstanding experience. This is especially important to retain customers and to influence online word-of-mouth (WOM) on social media platforms.

3.2. Current application of social media in Macau's hotel industry

Nowadays, social media websites such as TripAdvisor, Booking.com, WeChat, and TikTok have become an indispensable part of the hotel industry in Macau. These platforms not only help hotels promote and communicate with guests but also enable hotels to quickly understand guests' thoughts and opinions. Many hotels in Macau have started using comments on social media to analyze guests' feelings about the service. They analyze the content and emotions of comments to better understand what customers need. This approach can enable hotels to quickly identify issues and improve services, promptly resolve problems encountered by guests, make the accommodation experience more intimate, and meet personal preferences.

A study found that online reviews have a significant impact on the satisfaction of casino hotel guests in Macau [10]. For example, a good hotel environment and reasonable prices will make guests more satisfied. Researchers also used sentiment analysis tools to determine whether reviews were positive or negative, to see if guests had a pleasant accommodation experience.

The hotel could use this information so that they can do better. Social media data analytics tools can help hotels quickly learn what many of their guests think and feel. They can change their

services based on that. They refine their services according to the needs of their customers and solve problems before they get worse. If guests are satisfied, they may be more likely to stay next time.

4. Advantages and impacts of applying social media data mining to enhance customer satisfaction

4.1. Real-time insights and timely response

A lot of people leave messages every day on platforms such as TripAdvisor, WeChat, TikTok, Booking.com. They show what guests care about most, and what kind of services guests want. Hotels can use sentiment analysis and text mining to quickly determine if a review is good or bad. Through this approach, hotels can promptly identify deficiencies in their services, respond promptly to guest dissatisfaction, and resolve issues before they become more severe. The final goal is to make guests stay more satisfied and comfortable.

A study found that in Macau, the quality of hotel environment and reasonable prices can affect guest satisfaction [11]. If hotels can use emotion analysis technology to quickly detect online feedback on these issues, they can take immediate action to improve services in advance and provide better experiences for future guests. This can also reduce the occurrence of negative reviews, as a single negative review may affect whether other guests choose to stay at this hotel.

4.2. Identifying key drivers of customer satisfaction

Social media data mining has an important role in tourism. It aids hotels to find out which factors have the greatest impact on guest satisfaction. Macau hotels can use text mining to analyze what guests often talk about in online reviews, for instance, whether the room is clean, and whether the service is fast enough. Hotels can see what guests care about most and summarize what kind of service guests want. A study found that at casino hotels in Macau, there is a clear link between the price and environment, and guest satisfaction [11]. Hotels find the factors that most affect the guest experience and hence make their services better. They invest resources in areas that matter most and improve overall guest satisfaction effectively.

4.3. Personalization of guest experience

By systematically analyzing data from social media platforms and online reviews, hotels can gain a deeper understanding of their guests' specific preferences, expectations, and concerns. This granular insight allows hotels to move beyond a one-size-fits-all approach and instead offer customized services tailored to individual needs. For example, hotels can identify popular amenities, preferred room features, or frequently mentioned pain points, and then adjust their offerings accordingly. Personalized experiences not only improve guest satisfaction but also foster stronger emotional connections and loyalty. Moreover, by continuously monitoring evolving guest feedback, hotels can proactively innovate and adapt their services to changing customer demands, thereby maintaining a competitive advantage in a dynamic market.

4.4. Competitive advantage and response to emerging trends

The market competition in Macau's hotel industry is extremely fierce, and the use of social media data provides important support for hotels to gain competitive advantages. Hotels that attach importance to customers' online reviews can analyze a large amount of customer feedback, promptly

discover deficiencies in their services and improve them, thus standing out from many peers. Positive online reviews not only help to attract new customers, but also promote the loyalty of existing customers; on the contrary, negative reviews prompt hotels to reflect and quickly adjust their service strategies to improve the overall customer experience. At the same time, by continuously paying attention to emerging trends and customer needs reflected on social media, hotels can keenly capture changes in customer preferences and promptly launch innovative services that fit the market. For example, more and more guests are concerned about environmental protection and sustainable development. Hotels meet this demand by providing green and environmentally friendly services, which not only enhances customer satisfaction, but also enhances their own brand image and market reputation. In summary, the use of social media data to support service optimization and innovation has become a key factor for Macau's hotel industry to stay ahead and achieve sustainable development in the fierce competition.

5. Discussion

Using social media data provides useful information for hotels in Macau. Hotels use methods such as sentiment analysis and text mining so that they can better understand customer satisfaction and find problems that need to be solved. Hotels can look at a lot of unstructured data that comes from online reviews and social media posts, which allows them to provide better service. Hotels can detect problems before guests' dissatisfaction becomes more severe and solve them in a timely manner. This proactive approach to improving service can make guests more satisfied and willing to stay again.

In Macau, a place with many tourists and fierce competition, information on social media is very useful for hotels. This helps some hotels stand out among other hotels. Those that are willing to listen to their guests attempt to provide better service based on feedback on social media to make guests' stay more comfortable and satisfying. By doing so, more guests are willing to come back, and new customers are likely to be attracted. At the same time, by analyzing these reviews, hotels can also discover new trends, such as which services or facilities guests are more concerned about recently, and make timely adjustments to ensure that their services meet the needs of guests.

6. Conclusion

In conclusion, this study explores the application of social media data mining techniques to understand and enhance customer satisfaction within Macau's highly competitive hotel industry. The findings reveal that social media platforms offer rich, real-time insights into guest experiences, allowing hotels to promptly identify service deficiencies and address customer concerns. By leveraging methods such as text mining and sentiment analysis, Macau's hotels can uncover key drivers of satisfaction—such as cleanliness, service speed, pricing, and environment—and tailor services accordingly. This proactive responsiveness not only improves customer satisfaction but also fosters loyalty and positive online word-of-mouth, which are critical for maintaining competitive advantage in Macau's flourishing tourism market. Additionally, the ability to detect emerging guest preferences supports hotels in innovating and adapting their offerings to meet evolving needs, further strengthening their market position.

Despite these valuable insights, this research has some limitations. Primarily, it relies on secondary data from social media platforms without direct empirical data collection such as interviews or surveys from hotel guests or staff. This may limit the depth of understanding regarding the nuances behind guest satisfaction and service quality perceptions. Furthermore, the study

focuses on Macau's unique tourism context, which may reduce the generalizability of the findings to other regions with different cultural, economic, or market dynamics. Future research should aim to incorporate mixed methods approaches, including qualitative interviews and quantitative surveys, to validate and enrich the understanding gained from social media analytics. Comparative studies across different geographic regions and hotel categories would also be beneficial to assess the transferability of these insights.

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