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# PATTERNS OF GUEST PREFERENCES AND STAY CHARACTERISTICS IN THE HOSPITALITY INDUSTRY

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## ABSTRACT

Understanding guest preferences and stay characteristics is essential for improving service quality, operational efficiency, and customer-oriented decision-making in the hospitality industry. This study analysed booking behaviour using the publicly available Hotel Booking Demand dataset comprising 119,390 reservation records from city and resort hotels. A quantitative cross-sectional design based on secondary data analysis was employed. Data preprocessing included cleaning, variable standardisation, and preparation for statistical analysis. Descriptive statistics were used to summarise guest profiles, accommodation preferences, stay duration, and booking outcomes. The findings indicated that city hotels accounted for the majority of reservations, while first-time and transient guests represented the largest customer segments. Bed-and-breakfast was the most preferred meal plan, and guests generally exhibited short stay durations with weekday nights exceeding weekend stays. Approximately one-third of reservations were cancelled before arrival, highlighting the operational significance of reservation management and demand forecasting. The results demonstrate that guest preferences, stay characteristics, and booking behaviour are closely interconnected and provide valuable information for understanding customer travel patterns. The study contributes to hospitality analytics by illustrating how large-scale reservation data can support customer segmentation, service personalisation, pricing strategies, and resource planning. These findings offer practical evidence for hotel managers seeking to improve decision-making and enhance guest experiences through data-informed operational strategies.

Keywords: hospitality industry, guest preferences, hotel booking behaviour, stay characteristics, reservation analytics

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## 1. Introduction

The hospitality industry has undergone substantial transformation in recent times, with an increasing number of hotels adopting a data-driven approach to understand their customers and operate efficiently. Contemporary traveller expectations, technological advancements and increased competition have led to a change in the travel and accommodation sector from merely offering a space to stay to offering an experience that fosters satisfaction and repeat bookings. Thus, in order to plan strategically and provide customer-oriented services, it is important for contemporary hospitality management to have a clear idea of the preferences, booking characteristics and stay patterns of guests. Research in several fields has focused on understanding the relationships between different behaviors to enhance the reliability of evidence-based decisions and analyses (Schwingshackl et al., 2021; Chromý et al., 2023; Biedermann et al., 2026). This same approach has been highlighted in other contexts of decision-making where systematic analysis of behavioral patterns facilitate adaptation to shift in their environments (Biesbroek et al., 2026).

In the hotel industry, digital booking platforms have revolutionized the way that guests find information, compare their options and make bookings. Online booking systems produce huge amounts of reservation data on an ongoing basis, which can be used to gain insights into customer preferences, travel behaviour, accommodation choices and booking decisions. These data are increasingly being used by hotels for more efficient and optimised pricing, resource allocation and customized services based on guest expectations. Past studies have shown that online reviews and digital feedback can be used to provide valuable insights into customer preferences before they arrive at the hotel, which can help them anticipate the needs of their guests and enhance their service offerings (Rahimi et al., 2022). Similarly, with the changing guest expectations, hospitality companies cannot just engage in transactional dynamics but must build experiences that deliver long-term customer value (Mediratta, 2025). Cultural diversity also plays a role in different expectations and assessing services, highlighting the vital role of comprehending the different kinds of customers in the global hospitality market (Ilieva, 2024).

The behaviour of hotel guests when they book their accommodation has become an increasingly significant field of study in hospitality management given that the characteristics of their reservation affect their occupancy, revenue and operation. Various factors such as booking channels, travel purpose, hotel reputation, pricing strategies, and booking time impact strategic booking decisions. Corporate social responsibility is also a factor that can impact hotel booking

intentions during uncertainty periods as it is found to affect hotel performance as a whole (Shin et al., 2021). Likewise, the accuracy of forecasts has been associated with the booking windows and reservation dynamics, underscoring the importance of studying past booking trends for operational benefits (Webb et al., 2022). Another interesting example of consumer decision-making in an online booking environment is that users assess various attributes at the same time before booking a trip, which shows that consumers are increasingly strategic in their buying decisions (Masiero et al., 2020). The integration of artificial intelligence and predictive analytics in the hotel industry has further enhanced hotel reservation systems, enabling inventory optimisation, dynamic pricing, and operational efficiency (Kaul, 2023).

The latest technological advances have given hotels the opportunity to provide intelligent and personalised services to customers at every touchpoint of their journey. Smart hospitality technology, digital information system and integration booking platforms allow organisations to more effectively gather and analyse guest information and provide customised service delivery. Studies have indicated that there is a gap between customer expectations and their actual experiences of smart hotel services, highlighting the importance of understanding customer behaviour with smart hotel services through empirical analysis (Zhou et al., 2026). Likewise, user feedback from online platforms has emerged as a crucial source of information for assessing user perceptions and service quality (Albesher et al., 2025). Many accommodation booking platforms are designed to facilitate communication between several players, and service strategies can be optimized to improve the performance of the platforms and satisfaction with their services.With the development of the accommodation booking platform, it has become possible to interact with multiple players, and by optimizing service strategies, both the performance of the platform and user satisfaction can be improved.

Although significant strides have been made in hospitality analytics, previous studies have tended to only study a single facet of customer behavior such as booking intention, revenue management, online reviews, pricing, or guest satisfaction. Fewer studies have explored guest preferences and characteristics of the stay in a single analysis using a large volume of reservation data. The interrelationships of the different factors can be useful evidence for enhancing marketing strategies, service personalisation and operational decision making. Therefore, the aim of this study is to analyse the trends of guest preferences and stay features based on a holistic hotel booking dataset to deliver practical implications for data-driven management in the hotel sector. The aim of research of this study is as follows:

- To examine the demographic, booking, and stay characteristics of hotel guests using large-scale reservation data.
- To identify patterns of guest preferences related to accommodation, meal selection, and stay behaviour within the hospitality industry.
- To evaluate booking outcomes and customer behaviour in order to provide evidence that supports operational planning and guest-centred management strategies.

## 2. Materials and Methods

### 2.1 Study Design

This study was carried out with quantitative, cross-sectional research design with secondary data collected from an open-access hotel booking dataset. The investigation concentrated on the patterns of preferences and characteristics of stays of guests based on the analysis of historical records of guests' bookings. Retrospective observational approach was used as the data was already recorded booking transactions and not obtained by survey or experiment. The study analysed booking behaviour, accommodation preferences, stay duration, customer categories and the outcomes of the reservation to give a thorough evaluation of the customer characteristics in the hospitality sector. The analytical approach was used to describe the patterns and examine relationships between important booking variables without altering the data collected. .

### 2.2 Data Source

The publicly available Hotel Booking Demand dataset that includes booking data for city and resort hotels was utilized (Mostipak, 2019). This collection contained 119,390 bookings and information on reservations from several years. The variables included several aspects of the hotel booking process, such as the hotel type, arrival date, lead time, number of adults, children and babies, length of stay, meal preferences, reserved and assigned room types, customer type, market segment, distribution channel, booking modifications, average daily rate, parking requirements, special requests, repeated guest status, cancellation history and outcomes of the hotel reservations. The diversity of variables allowed a complete analysis of the guests' preferences and stay characteristics in various booking situations.

### 2.3 Data Preparation

The data were systematically preprocessed to enhance data quality and analytical consistency

before analysis. Redundant booking data identified as duplicate was removed and variables that contained a high proportion of missing data, but were not directly relevant to the aims of the study, were not analysed further. The missing values of the rest of the variables were investigated and treated with suitable data cleaning techniques. Continuous variables were checked for implausible values and outliers, while categorical variables were harmonised with regard to the naming conventions and the definition of the categories. For the purpose of statistical interpretation and to enhance interpretability of the characteristics of the guests and their booking patterns, several of the variables were re-coded into meaningful analytical groups.

### 2.4 Study Variables

Guest characteristics, stay characteristics, booking behaviour and reservation outcome variables were included in the analysis. Guest related variables consisted of number of adults, number of children, number of babies, country of origin and repeat guest status of the customer. Stay characteristics included hotel type, reserved room type, assigned room type, meal preference, weekend nights, weekday nights, parking requirements and special requests. The lead time, market segment, distribution channel, booking modifications, deposit type and average daily rate were adopted as indicators of booking behaviour. The outcome variables were the reservation status and cancellation of booking to measure the overall performance of booking and customer behaviour during booking.

### 2.5 Statistical Analysis

The statistical analyses were done in Python using the Jupyter Notebook environment. Data preprocessing and management were done using Pandas and NumPy. Continuous variables were summarised as means and categorical variables were summarised in terms of frequencies and percentages. Independent sample t-tests or one-way analysis of variance (ANOVA) were used to explore associations between the continuous variables and the Chi-square test of independence was used for comparing categorical variables. Correlation analysis was done to assess the relationships between selected numerical variables. Matplotlib and Seaborn were used to create statistical visualisations such as bar charts and distribution plots to visualise booking characteristics and preference patterns of the guests. Results were considered statistically significant at $p < 0.05$ and all statistical analyses were performed using reproducible Python scripts to ensure transparency and consistency of statistical analyses.

## 3. Results

### 3.1 Guest Profile and Booking Characteristics

In total, 119,390 hotel booking profiles were analyzed in order to determine preferences and characteristics of the customers staying at hotels. City hotels had the highest percentage of bookings, comprising 66.4% of all bookings, while resort hotels had 33.6% of bookings. An average reservation consisted of 1.86 adults, 0.10 children, and 0.01 infants, meaning that most of the bookings were placed by adult travelers. The repeat customers amounted to 3.2% of all bookings, showing that the data sample mainly consists of new visitors. In general, the customer profile shows that the main customer base includes individuals or groups of people rather than returning guests. The table below shows the main features of the bookings analyzed.

**Table 1. Descriptive characteristics of hotel guests and booking profiles**

| Variable | Value |
|---|---|
| Total bookings | 119,390 |
| City hotel bookings | 79,330 (66.4%) |
| Resort hotel bookings | 40,060 (33.6%) |
| Repeated guests | 3,810 (3.2%) |
| First-time guests | 115,580 (96.8%) |
| Mean adults per booking | 1.86 |
| Mean children per booking | 0.10 |
| Mean babies per booking | 0.01 |

Figure 1 below gives a representation of the total bookings in terms of both the city and resort hotels, including the proportion of repeat and first-timers, and this shows that there is predominance in terms of bookings in city hotels.

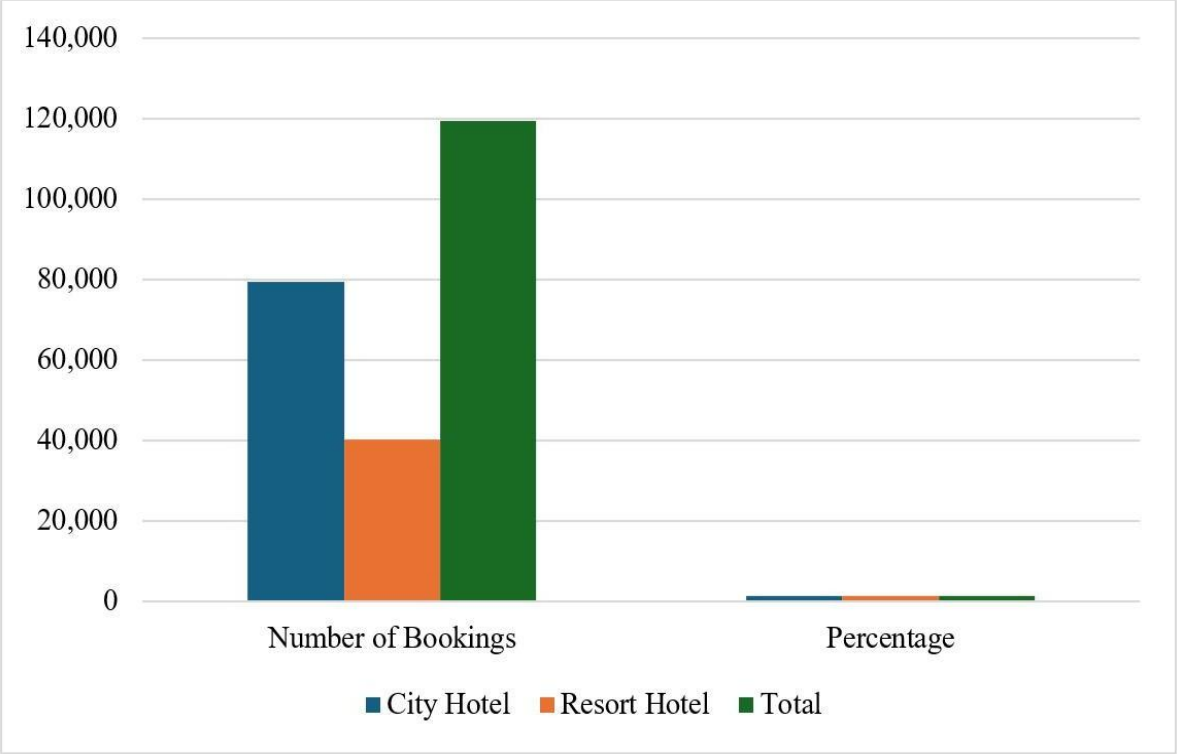



**Figure 1. Distribution of hotel types and guest categories**

### 3.2 Guest Preferences and Stay Characteristics

The analysis of hotel bookings in the industry was done using 119,390 booking records to evaluate guests' preferences and booking details. In terms of the type of hotel where the reservations were done, city hotels had the largest number of reservations (66.4%), while resort hotels had 33.6% of bookings. On average, each booking involved 1.86 adults with few children (0.10) and infants (0.01), showing that the bookings were mainly from adults. The repeat customers only comprised 3.2% of the bookings indicating that the data set used was mainly from the first-time customers. Overall, the booking data indicates a client profile mainly made up of first-time individual travelers. Table 1 summarizes the key features of the analyzed bookings.

**Table 2. Guest preferences and stay characteristics**

| Characteristic | Observation |
|---|---|
| Average weekend nights | 0.93 |
| Average weekday nights | 2.50 |
| Bed & Breakfast (BB) | 77.3% |

| | |
|---|---|
| Half Board (HB) | 12.1% |
| Self Catering (SC) | 8.9% |
| Transient customers | 75.1% |
| Transient-party customers | 21.0% |
| Contract and group customers | 3.9% |

As can be seen in Figure 2, meal preferences were very focused on the Bed & Breakfast package, while the weekdays were always higher than the weekends, pointing towards a more dominant short-duration travel pattern.

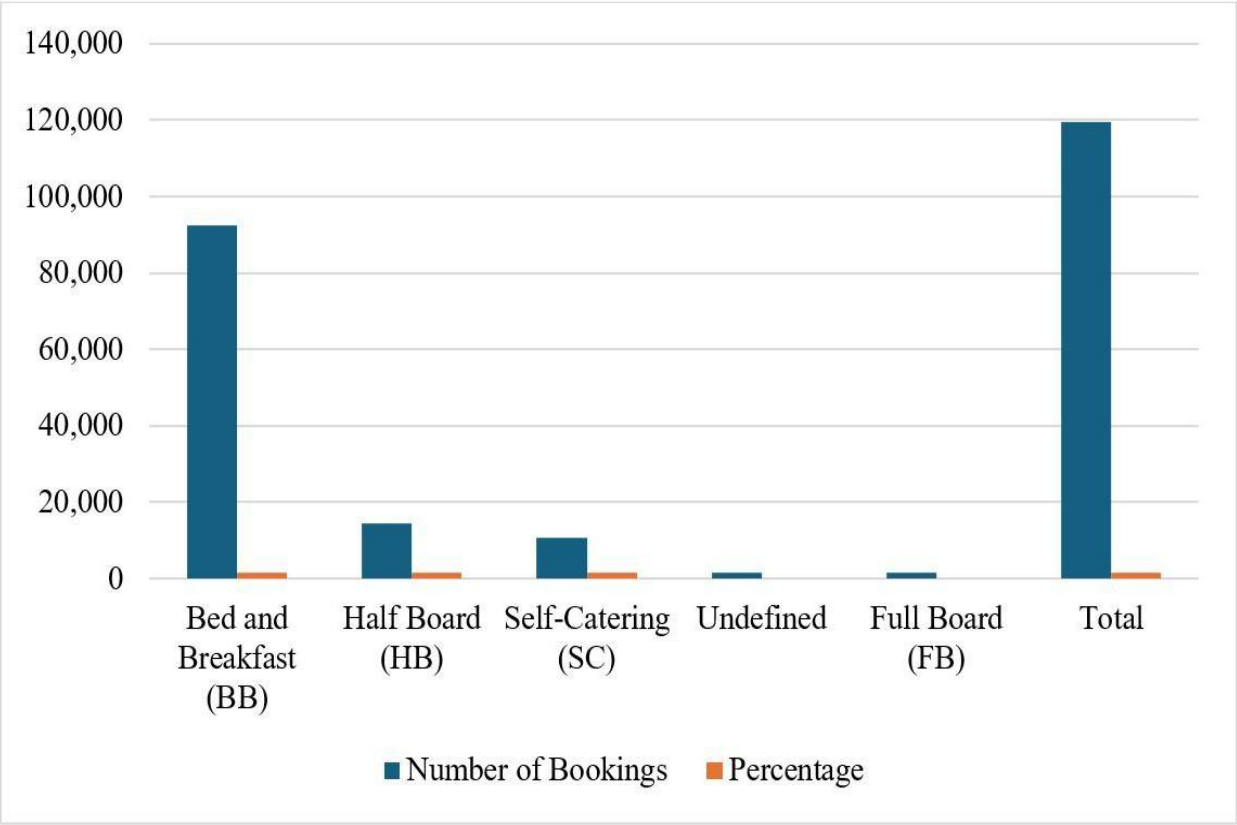



**Figure 2. Distribution of meal preferences and average stay duration**

### 3.3 Booking Behaviour and Reservation Outcomes

There was significant variation in booking behaviour between reservations. Out of all bookings, about 37.0% were not able to be used or were cancelled prior to arrival, which shows the importance of managing reservations in the hotel industry. The high proportion of transient customers coupled with low re-visitation rates indicate that the main reason for booking was

short-term travel needs, not customer loyalty. These patterns can also be used as a guide for hotels to better develop guest retention programmes, and also to optimise their demand forecasting and cancellation management strategies. In general, the booking behaviour observed shows that the reservation is a very dynamic process with many booking changes and different degrees of customer engagement. The main booking outcomes that occurred in the data is summarised in Table 3.

**Table 3. Booking behaviour and reservation outcomes**

| **Booking indicator** | **Value** |
|---|---|
| Booking cancellation rate | 37.0% |
| Booking completion rate | 63.0% |
| Repeat guest rate | 3.2% |
| First-time guest rate | 96.8% |
| Dominant customer type | Transient |
| Dominant accommodation type | City Hotel |

Figure 3 displays the overall results of the bookings: it shows the percentage of successful bookings and of cancelled bookings, as well as the distribution of customer categories. The data clearly shows that there were more successful reservations than cancellations, but the percentage of cancellations was high enough to impact operational plans and revenue management.

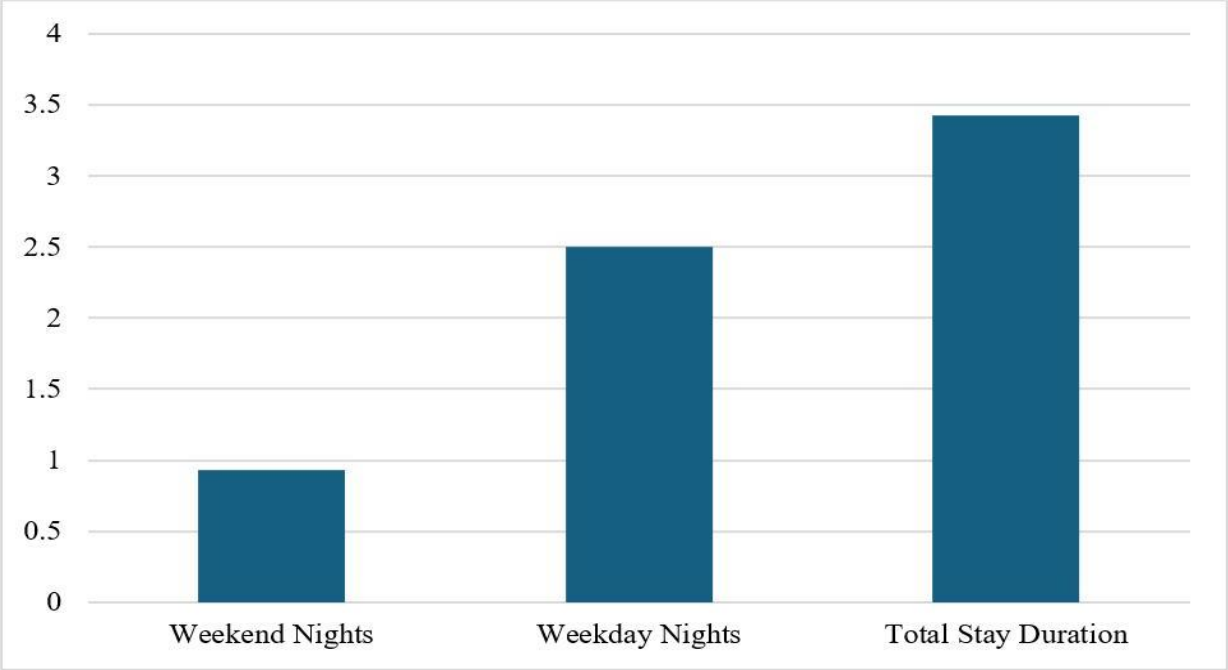



**Figure 3. Reservation outcomes and customer booking behaviour**

## 4. Discussion

The present study examined patterns of guest preferences and stay characteristics using a large-scale hotel booking dataset, providing evidence of how reservation behaviour varies across accommodation types, customer categories, and booking outcomes. The prevalence of city hotel bookings implies that urban accommodation still accounts for a greater percentage of the tourist market compared to resort accommodation due to the impact of business travel, shorter stays, and convenience. Moreover, the low rate of repeat clients clearly shows that hotels work in an extremely competitive environment, in which the ability to attract new customers is a key element of success. All of these results are in agreement with earlier studies showing that by knowing the preferences of the guests prior to their arrival, hotels can better satisfy their needs (Rahimi et al., 2022).

Meal choice tendencies demonstrated a distinct preference for bed-and-breakfast packages, as well as lower demand for half board and self-catering arrangements. The above preference can indicate that a considerable number of guests prefer flexible arrangements during their visit rather than full accommodation packages. Nowadays, accommodation is more likely to be assessed by hotel clients based on its convenience, value, and personalization characteristics than traditional service packages (Milosh, 2023). In addition, previous studies have found that people tend to consider several aspects related to accommodation bookings before making a reservation,

such as accommodation features and their value (Boto-García et al., 2021). Consumer expectations during hotel selection have also changed over time, which forces hotels to adapt to customer behaviour (Iyengar & Venkatesh, 2024).

Additionally, the analysis revealed that there were more weekday visits compared to weekend visits, suggesting that short stays are more common in the booking profile. This is similar to other studies, which have found that the booking factors vary depending on the distance travelled and the duration of the stay. Extended-stay guests may have different evaluations of an accommodation than do short-term guests, because they take into account other factors including accessibility, convenience, and extended service quality (Lee & Kim, 2021). The high proportion of transient customers in the sample also illustrates the high degree of mobility of travelers and the need for flexible booking systems that allow for a variety of booking behavior.

The booking results showed that over 33% of the reservations were canceled prior to arrival, reflecting the challenges in the reservation process with uncertainty. When it comes to hotel performance, accurate prediction is the key to impact on cancellation behaviour, occupancy forecasting, and staffing requirement and revenue management. More recent studies that have applied big data analysis to hotel operations have also found that big data gained from hotel reservations offer excellent opportunities for understanding booking intentions and for predictive decision-making in hotel operations (Chalupa & Petricek, 2024). In addition, the time of the reservation and booking horizons have been demonstrated to have an impact on how much customers are willing to pay (Chalupa et al., 2023). These results highlight the need of analysing the dynamics of reservations in conjunction with the characteristics of the guests for effective operation planning.

In general, the results indicate that preferences for guests and attributes of the stay are intrinsic aspects of customer behaviour instead of isolated booking attributes. By combining these reservations with guest data, hotels can discover significant trends and patterns in customer behavior, which can help them tailor their services and marketing strategies. This type of information enables the creation of strategies for customer-centred management that can lead to more efficient operations, and meet the growing demands of travellers. Large-scale booking analytics will therefore continue to play a key role in the hospitality sector, which is constantly changing, in order to be competitive.

## 5. Conclusion

In the present study, we sought to understand the preferences and the stay characteristics of guests, using a large scale hotel booking data to gain a detailed understanding of the bookings behavior of guests in the hotel industry. The results showed that business travellers prefer the city hotels and that the first time and transient market segments were the largest groups. The most popular type of meal was B&Bs and the length of stay was short, particularly on weekdays. While the majority of reservations went through, those that cancelled demonstrated good management of reservations as well as the need for better forecasting demand. Taken together, these results highlight the strong relation among guest preferences, stay characteristics and booking outcomes and how it can be used to improve the operational performance. In the field of hospitality, the study shows the importance of having large-scale booking analyses to understand behavioural patterns that can inform evidence-based decision making. On the other hand, the results can help the hotel managers to identify and reinforce the segmentation of their customers, provide customised services, optimise pricing and allocate resources based on the booking patterns observed. Future research could involve further behavioural measures, including post-stay customer evaluation, online reviews, loyalty programs, and customer satisfaction, to create a deeper insight into customer preferences and maintaining long-term customer engagement in the hospitality industry.

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