**Hotel Booking Analysis**

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**Abstract:** The vast amount of data available on the internet is a treasure trove for businesses looking to gain valuable insights. One such area where this data can be found is in e-commerce and customer review websites. By conducting Exploratory Data Analysis (EDA) on a dataset of hotel bookings, companies can uncover patterns and trends in customer behaviour that can be leveraged to improve customer engagement and boost the success of their hotel booking operations. Understanding the variables that have the greatest impact on booking success is key to making informed business decisions.

1. **Problem Statement**

### Mishandled Reservations and Double Bookings:

### When a guest arrives at a hotel and a room is not available, it can be a difficult situation for both the guest and the hotel staff. To prevent these types of errors, a robust property management system like RoomKeyPMS can be helpful. However, if a mistake has already occurred, there are steps that can be taken to handle the situation gracefully.

### First and foremost, apologize to the guest sincerely. Next, quickly find a room for them, even if it is a larger suite at no extra charge. If the hotel is full, consider booking a room at a nearby hotel and arrange transportation for the guest. Additionally, offer a discounted rate for a room at your hotel for the next night. Remember, this is a chance to build your brand and a few dollars should not be the priority. To avoid similar mistakes in the future, it's important to implement a property management system that allows staff to easily track and manage bookings.

### Incorrect Guest Preferences:

Errors in guest assignments or bookings can cause a significant amount of stress for both the customer and hotel staff. In order to handle these types of mistakes effectively, it is crucial for hotel managers and staff to be well-trained in both conflict resolution and customer communication. No matter the specific complaint, hotel staff should always listen attentively, apologize, and thank the guest for bringing the issue to their attention. Additionally, it is essential for hotels to have clear policies in place regarding who has the authority to resolve different types of complaints and to have guidelines in place for handling common complaint situations so that all members of the staff know how to respond.

Third-Party Scams:

If you’ve had the unfortunate experience of greeting a guest who thought they had a reservation but had inadvertently [been victim to a scam](http://www.latimes.com/travel/deals/la-tr-spot-20150614-story.html)  on an illegitimate booking site, you know how unsettling this can be.

As a regular habit, monitor news and industry sites for word of these scams. Where appropriate, alert staff and customers if these illegal sites have targeted your region. For a guest who may have had their personal details exposed, contact the authorities and offer to book them a room if you have space available. If you don’t, follow the steps above for a double booking. Treat this guest with compassion and be as helpful as you can.

When visitors arrive and what they expected doesn’t match what you’re offering, try to accommodate them as best you can. Be calm, courteous and creative. By preparing ahead of time for any misunderstandings, you’ll be able to resolve customer complaints in a neat and satisfactory manner.

1. **INTRODUCTION:**

The Hotel Booking System is a tool that enables guests to book rooms at hotels through the hotel's website in a secure and efficient manner. It also allows hotels to manage their reservations and receive payment for bookings online.

This system is an all-in-one solution for hotels, providing features such as integration with third-party hotel providers, room inventory management, and booking management through a centralized system. It also includes functionality for creating and managing contracts with partners. This system aims to streamline hotel operations, boosting bookings and making the overall process more efficient.

**3. STEPS INVOLVED:**

**. Importing datasets:** Import both the datasets from google drive to google collab notebook.

* **Manipulating dataset:**

Deletion and rearrangement has been done in this part, deleted columns like android version and current version. Because of not being considered in the analysis.

* **Null values Treatment:**

Both the dataset specially User Reviews data contains a large number of null values. In the User Reviews data set, most of the columns contain the same null values so we dropped the observations corresponding to null values. In the Play Store dataset, the Rating column has the maximum null values so we imputed them with the median value of the column. Other null values in columns were dropped accordingly.

* **Exploratory Data Analysis:**

After importing datasets, did some exploring, deletion of columns and treated null values of different columns. After that, we compared each feature individually and together to get a better understanding and inferences from them

* **Univariate Analysis:**

Uni means one and variate means variable, so in univariate analysis, there is only one dependable variable. The objective of univariate analysis is to derive the data, define and summarize it, and analyze the pattern present in it. In a dataset, it explores each variable separately. It is possible for two kinds of variables- Categorical and Numerical.

* **Count Plot**: Using count plot we can get the count of different variables where we can easily compare the different categories among themselves.
* **Pie Chart:** To get the population percentage of different variables for e.g. (Type variable), by using pie-chart we get the idea that how many percentages of the total population of the applications are free or paid?
* **Histogram**: A histogram provides a visual representation of the distribution of a dataset: location, spread and skewness of the data; it also helps to visualize whether the distribution is symmetric or skewed left or right. We used the histogram on features like ‘Size’, ‘Rating’ etc.
* **Distplot**: The distplot represents the univariate distribution of data i.e., data distribution of a variable against the density distribution. The seaborn. distplot () function accepts the data variable as an argument and returns the plot with the density distribution.
* **Bivariate Analysis**: Here two or more than two variables are being considered for the analysis. We can get the relationship between two variables and are they dependent on each other or not. This definitely gave us a vivid and meaningful image.
* **Bar plot**: We analysed here categorical data to numerical data and our main purpose is to get the categorical features concerning some numerical features. This graph gives us a better understanding between two variables.
* **Joint plot:** Our main aim of using this graph because this shows better fluctuation on one numerical feature with others. With a single at it we can easily understand the fluctuation and get a better insight.
* **Heatmap**: A heat map is data analysis software that uses colour the way a bar graph uses height and width: as a data visualization tool. We applied heatmap to find out the correlation between numerical features, it always gives us a better relationship between

## 4**. Conclusion:**

Our strategy should focus on targeting city hotels, as they account for the majority of bookings. To reduce high cancellation rates, we should consider implementing a more flexible deposit policy. We should also allocate more budget towards the peak summer months of June to August. To attract more guests from Europe and Portugal, we should prioritize marketing efforts in those regions. Since we do not have many returning guests, we should focus on offering high-quality services and amenities to encourage repeat business. In terms of distribution channels, we should prioritize working with travel agents and tour operators, followed by direct bookings through our hotel. To encourage more direct bookings, we should offer special promotions or incentives.

## **5. References:**

* Analytics Vidya
* Research Gate
* Towards Data Science