Analyzing the Performance & Efficiency of The Radisson Hotels using Data Visualization Techniques

BACHELOR OF SCIENCE IN MATHEMATICS

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CATEGORY:

Data analytics with Tableau

PROJECT TITLE :

Analyzing the Performance & Efficiency of The Radisson Hotels using Data Visualization Techniques

INTRODUCTION:

Overview: A brief description about your project.

Purpose: The use of this project. What can be achieved using this.

Problem Definition & Design Thinking.

When running a successful and demanding hospitality business, most hotel owners like a hotel that is running at full capacity and bringing in sizeable revenue. Most of the time hotel booking cancellations can be hurtful to business owners; although sometimes there are genuine reasons for guests to do so. These last-minute cancellations can result in lost revenue unless some measures are undertaken to mitigate the loss. The purpose of this project is to analyze Hotel Bookings data, investigate cancellations, and their underlying patterns; and suggest measures that can be implemented to reduce cancellations and secure revenue.

As per an article written on Booking.com, the first thing that hotel owners can do is to take a closer look at their property's specific cancellation patterns and understand guest behavior patterns. Backed by this research Benjamin Verot suggests in his article 8 Tips to Reduce Last Minute Hotel

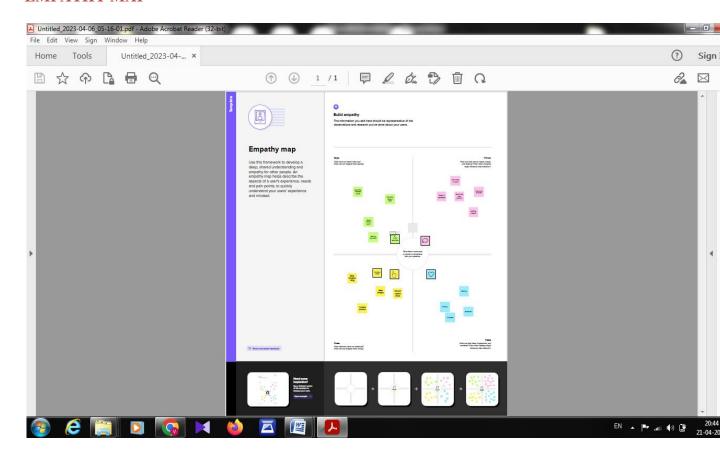
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Cancellations and No Shows some steps that owners can execute while setting up a robust cancellation policy.

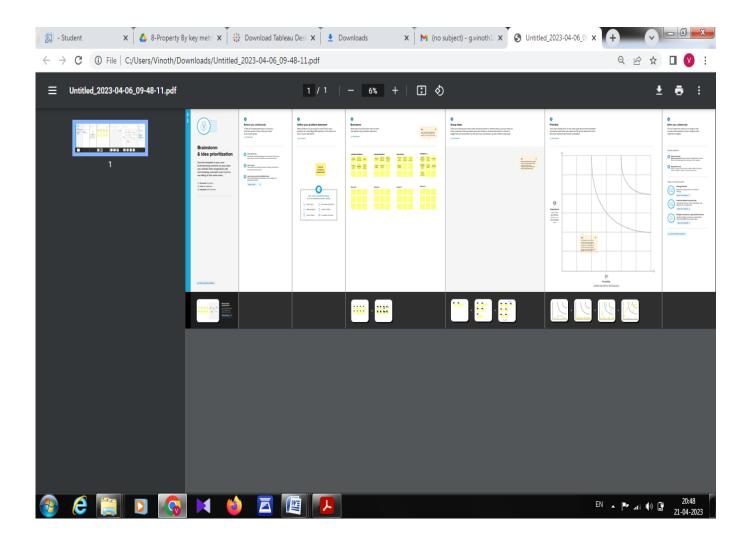
- Requiring credit/debit card deposits
- Using length of stay restrictions
- Offering low rates/discounts for direct bookings
- Adopting a cautious overbooking strategy

PROBLEM DEFINITION & DESIGN THINKING

EMPATHY MAP



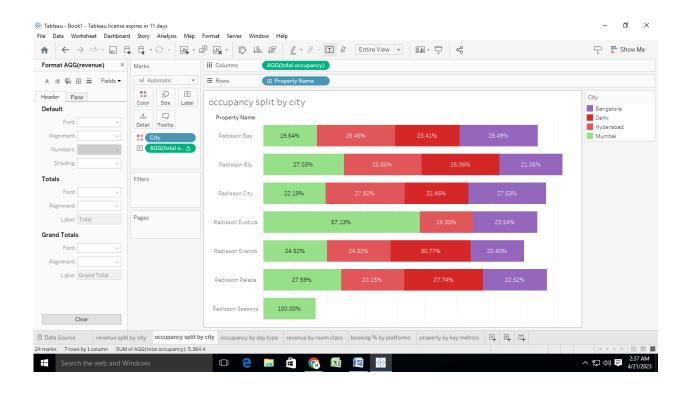
IDEATION AND BRAINSTORMING MAP



EXPLAIN HOTEL ACTIVITIES:

When we look at the bookings that were not canceled per deposit type (majority of the total bookings) we see those bookings with no deposit taken, form the majority. There is a massive difference between

no deposit bookings and the other types. Similarly, if we look at all the canceled bookings per deposit type, we can see that the bookings with no deposit collected for the majority, although the difference is not as pronounced in this case.



STRUCTURE OF A HOTEL SYSTEM:

If we could choose the most important factor contributing to guest satisfaction in the hospitality field, it would be hotel architecture and design. The layout and design of your hotel tells a story and completely defines the visitors' experience during their stay.



IMPORTANCE OF HOTEL:

Hospitality mostly generates revenue for local economies directly when tourists visit and spend money in hotels, restaurants, and entertainment venues. It helps to boost the economy indirectly because tourists purchase retail goods, pharmacy items, and locally made souvenirs and crafts

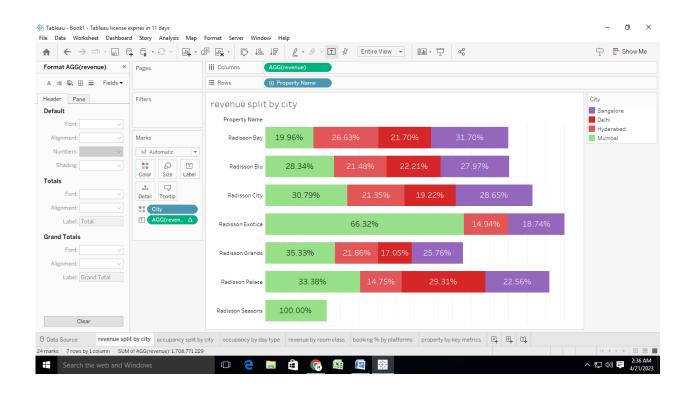
Hotels are most important globally as they provide facilities such as recreation and entertainment, meeting and conferences, and business gathering. Hospitality is the way for travelers for their accommodations, venues, meals, and drinks.

THERE SOME IMPORTANT ASPECTS OF THE HOTEL INDUSTRY ARE AS

- It generates Income
- It generates employment
- It is a source of foreign exchange earnings
- Developing Infrastructure
- It promotes peace & stability
- Increases government revenue
- It improves the quality of life of locals
- It provides recreational facilities

Hotels are definitely one of the fastest-growing sectors in the tourism sector and it is the main source as accommodation is the key part and important aspect in the development of any country. Tourism and the hotel industry always go hand in hand and nowadays there are a lot of hotels available which adds more value and choices for travelers to choose as per the choice within the region. The presence of a hotel isn't ample to sole-handedly uplift a region's tourism but they also give out a sign of health tourism.

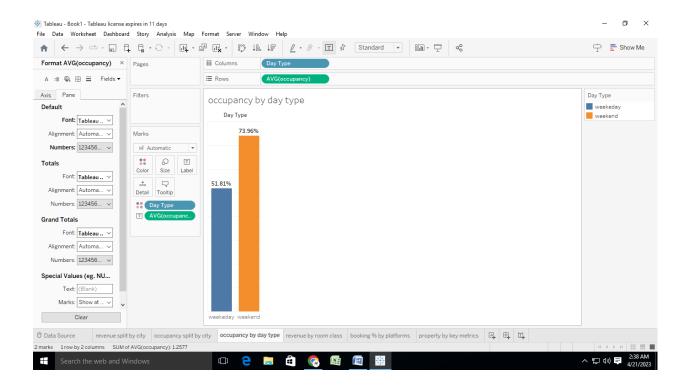
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HOTEL PROJECT:



The last thing in this evaluation section that I looked at was the distribution of rates for cancelled and non-cancelled bookings per distribution type only for just the City hotel. The reason City hotel was chosen was because its total bookings were higher than the Resort hotel. Generally, the distribution of the ADRs seems consistent regardless of the cancellation status, distribution type, or hotel type. more.



Brief Description About Project:

Revenue management refers to the strategic distribution and pricing tactics you use to sell your property's perishable inventory to the right guests at the right time, to boost revenue growth. Other products such as your amenities and food and beverage offerings will also come into the picture. Revenue management revolves around measurement of what customers from different audience segments are willing to pay and this can only be done by measuring and monitoring the supply and demand of your hotel rooms.

Within the hotel industry, it involves the use of data and analytics to help hotel owners monitor supply and demand so they can make predictions on consumer behaviour. This then allows them to make better informed decisions on what accommodation to promote to the right client, at the right time with appropriate pricing through the most suitable distribution channel. It's a cost effective business technique that allows the optimisation of inventories and helps to maximise profits while ensuring customer satisfaction.

Understanding hotel revenue management

Let's start with the basics of hotel revenue management to get a better understanding; every traveller has a maximum value they can offer your hotel and revenue management is about capturing as much of this value as you possibly can. There are many ways you can approach this, from motivating guests to book directly to offering purchase extensions, up-sells or extras as well as encouraging guests to become a return visitor.

Remember, the best strategies and techniques are based on the understanding that hotel pricing is fluid and can change from one day to the next. This is a key reason why hoteliers should never be afraid to increase your rates, and this may be surprising, but customers actually expect increases over time. Most businesses where consumers spend money, have varying prices based on demand, supply and shifts in costs.

Why is revenue management important for the hotel industry?

Effective hotel revenue management strategies and techniques can also help hoteliers:

- Better manage resources
- Protect against rostering too many staff during slow periods

• Ensure adequate numbers of staff are working during the busiest times

With all this in mind, hotel revenue management can drive the entire business plan when implemented effectively.

Your hotel distribution strategy is also a vital part of your revenue management plan; make sure you're on internet distribution channels that are best to promote your destination online. The right distribution channels can have strong marketing power, putting your hotel in front of many customers you aren't able to contact directly.

It is important to have a secure and advanced hotel revenue management system to maximise revenues and yields. By using smart technology and a large dataset, hotels are able to foresee market demand in hospitality and react to changes in the market where they can adopt new strategies and systems in order to maintain high levels of performance.

How to increase hotel revenue

There are many strategies that ensure more revenue is driven to your hotel, and many of them don't involve raising prices or playing with your rates much at all.

The key driver is to ensure the satisfaction of your customer. If your product offering is universally recognised as quality, you have the foundations to charge a higher price.

If guests feel like they're getting maximum value for their money, it's very likely they'll be willing to spend more. Getting more out of each individual guest who stays with you is a great way to increase the overall revenue of your hotel. For instance, guaranteed revenue from a guest you convince to stay an extra night by discounting the additional night might be worth your while, especially in low season. Here's a list of general tactics you can use to improve your hotel's revenue stream:

• Be easily bookable online

These days travellers enjoy the flexibility, convenience, and value of booking online. By starting to connect to online travel agents (or more OTAs) you'll easily see an uplift.

• Build a revenue based culture

Who's on your revenue team? Everyone!

Anticipatory service + proactive revenue-minded employee = emotionally connected customer with engaged loyalty and higher revenue returns.

• Upsell other hotel products

Revenue opportunities extend far beyond simply selling your rooms. Think about the amenities you have on site and what you're charging for them. Go even further by offering hotel guests the chance to purchase items like soap, utensils, bathrobes etc, specifically hotels that have a unique sense of style (boutique hotels are more likely to succeed with selling unique products used within their establishment).

• Leverage local events and attractions

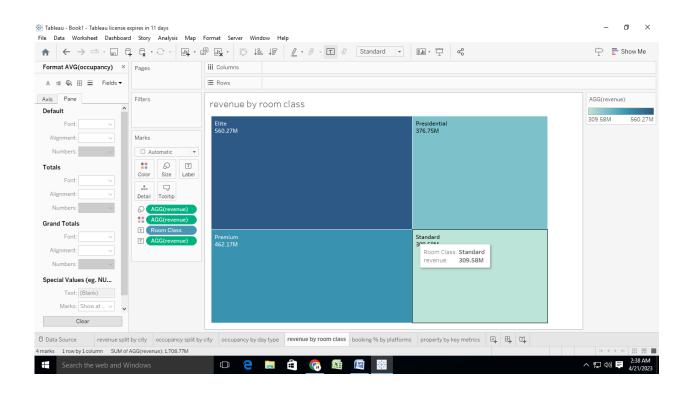
Events and attractions in the area are a great opportunity to curate packages for guests or offer additional services such as transport. The benefits are two-fold; guests enjoy their stay more and your hotel generates more income.

As you move away from tactics and towards a completely developed strategy around your revenue and room sales, you also need to start thinking about and understanding your key performance indicators (KPIs). Once you know what you should be looking at you can start analysing the data and developing ways to manipulate them in your favour.

As a base, these are some metrics you can explore:

- Occupancy rate
- ADR (Average daily rate)
- RevPAR (Revenue per available room)
- TrevPAR (RevPAR + ancillaries)
- GOPPAR (Gross operating profit per available room)
- RevPASH (Revenue per available seat hour) useful if you have a hotel restaurant

The principle that you should always keep in mind when choosing KPIs to benchmark against, is to assess market conditions in real-time and adapt accordingly



RESULT:

Final findings (Output) of the project

DISCUSSED PROBLEM:

Operational Issues in Hotels

Most people have stayed in a hotel at some point in their life. Some people love staying at hotels and look forward to it. What most travelers don't realize is the behind the scenes of the hotel business. The **hotel industry** is a comprised of businesses that provide accommodations to travelers as well as other amenities. Hotel businesses come with unique aspects that make it more challenging. Hotels are open 24/7 and provide an experience versus just a product or service like most businesses.

For example, most businesses you visit for an hour or less and receive the services they provide. In the hotel business, travelers can be at the hotel for twenty hours or more. These distinctive aspects come with challenges, including employee turnover, operating costs, and natural disasters. Let's take a look in more detail, and then look at some solutions for overcoming these challenges.

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- Course

24K views

Employee Turnover

The first most common operational issue in the hotel business is employee turnover. The around-the-clock hours means staff around the clock too. It is not your typical Monday through Friday office hours job. Therefore, finding long-term employees to work these hours can be difficult, not to mention ones that will work weekends and holidays.

The hotel business provides more than just a bed to sleep in, it's a service industry. The employees have to have the right personality to serve the type of customers that the hotel business attracts. Dealing with high volume customers can be trying, and may be a big reason hotels are known to have the highest employee turnover rate.

In addition to finding the right employees, the labor costs associated with employee turnover can have an impact on the hotel business. The money spent on advertising for the position, training for the position, uniforms, and other costs add up quickly. It's estimated that the turnover cost for an employee in the hotel business is 30 percent of their yearly salary. The high labor costs associated with employee turnover can impact operational issues.

Operating Costs

There are a few reasons that operating costs are becoming a problem for hotels. First, hotels are trying to keep up with the technology trends and each change adds expenses; for example, increasing Wi-Fi speeds and making it possible for travelers to check in on their phones. Having fast Wi-Fi networks adds costs. Hotels have to change out equipment and make sure their systems are compatible.

Have you been to a hotel recently and realized that they just renovated? Why bother? Well, some hotel companies require their hotels to renovate every two to four years to stay up to date. Renovating hotels can mean millions of dollars. All of these costs are increasing, while revenue may not, at least not at the same rate.

Natural Disasters

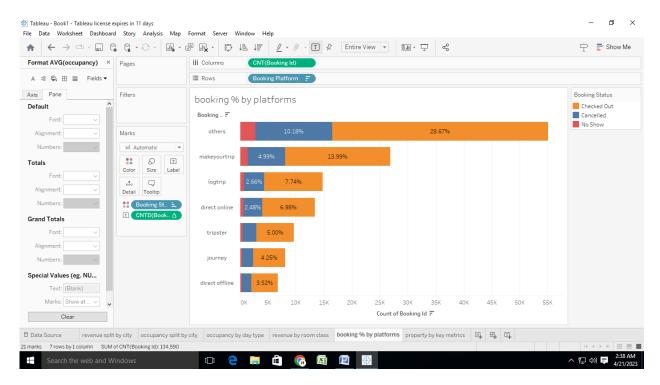
Natural disasters can have a big detrimental impact on the hotel industry. It seems like every time you turn on the news there's a new natural disaster that has occurred. These natural disasters often times occur in tourism areas, like seasides or islands.

Dealing with a disaster like an earthquake or hurricane involves taking care of the travelers, and of course, the immense cleanup time. Hotels that are affected by natural disasters can take years to rebuild. The employees are, therefore, out of work, and the hotel, being closed, doesn't make any money. When they do reopen, they will basically have to start over when it comes to hiring.

Disease Outbreak & Political Unrest

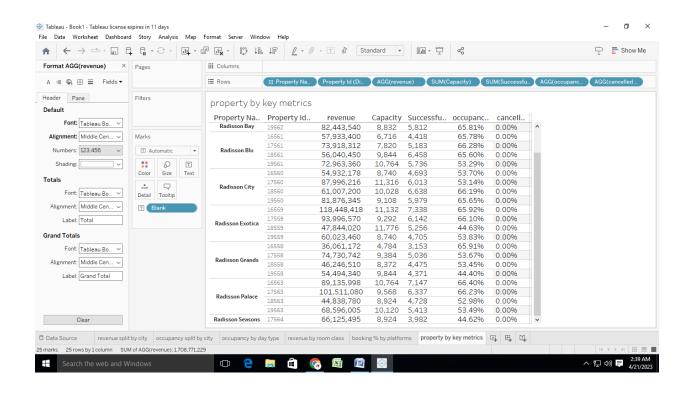
Additional unpredictable events that can be detrimental to the hotel industry include political unrest or disease outbreaks. Conflict in a particular area can prevent or limit safe travel and as a result, reduce tourism and hotel stays in that area.

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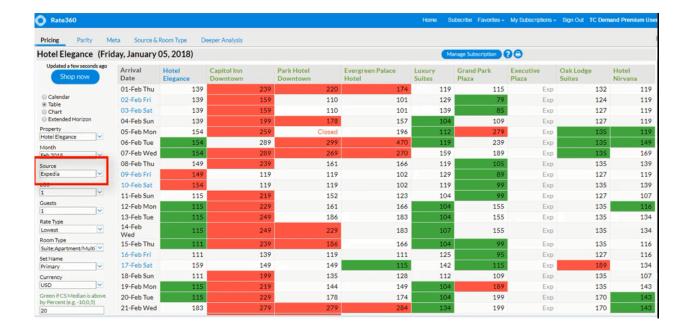


Continuously Changing Consumer Demands & Markets

Of course, it is more difficult to plan when your market is liable to change. Predictability makes business much more straightforward. For instance, business travel has been slower to recover, in large part due to the migration to remote and hybrid working. 16% of companies worldwide are fully remote, whereas 58.6% of the entire US workforce is remote. Moreover, these figures are only set to trend up further, with 78% of companies expecting this shift to continue. However, there is opportunity for those willing to embrace it in this market development.



DATA ANALYTICS



Data visualization is the change of crude information tables into numeric delineations that recount a story. Choosing what data to share, just as how to share it, are the two principal decisions in the making of a viz.

Data visualization can take numerous structures. As a rule, perceptions are diagrams, outlines, plots, and different types of mathematical clarifications. However, depending on it, information representation doesn't end there. Guides, pictures, and air pocket diagrams are additional sorts of information perception. Any time you see a guide with nations featured for accentuation, you're taking a gander at an information representation.

Also, the utilization of intelligent devices is viewed as the most elevated type of information representation. By and large, this just method the utilization of channels inside standard representations. For instance, envision you have a bar graph that shows the richness paces of the three most affluent nations in North America. An intuitive information perception may incorporate a drop-

down menu so the client can change to another mainland. In the event that she chooses Europe, we would see the ripeness rates in Germany, France, and Italy.

We can't fail to remember that the story part is critical. Information representation without a message behind isn't information perception by any means. Information representation is a basic apparatus for chiefs across each business area and size. Regardless of whether you're a startup or a worldwide partnership, information perception is fundamental in catching key data, helping dynamic, finishing serious examinations, planning, and drawing experiences.

ADVANTAGES & DISADVANTAGES:

List of advantages and disadvantages of the proposed solution

Advantages of Data Visualization:

1. Better agreement –

In business numerous a period it happens that we need to look at the exhibitions of two components or two situations. A conventional methodology is to experience the massive information of both the circumstances and afterward examine it. This clearly will kill a great deal of time.

2. A superior method –

It can tackle the difficulty of placing the information of both perspectives into the pictorial structure. This will unquestionably give a superior comprehension of the circumstances. For instance, Google patterns assist us with understanding information identified with top ventures or inquiries in pictorial or graphical structures.

3. Simple sharing of data –

With the representation of the information, organizations present another arrangement of the correspondence. Rather than sharing the cumbersome information, sharing the visual data will draw in and pass on across the data which is more absorbable.

4. Precise investigation –

With the assistance of information perception, it gets more obvious the patterns and hence draws a superior surmising of the information. Accordingly, giving associations an edge over the adversaries.

5. Deals investigation –

With the assistance of information representation, a salesman can without much of a stretch comprehend the business chart of items. With information perception instruments like warmth maps, he will have the option to comprehend the causes that are pushing the business numbers up just as the reasons that are debasing the business numbers. Information representation helps in understanding the patterns and furthermore different variables like sorts of clients keen on purchasing, rehash clients, the impact of topography, and so forth.

6. Discovering relations between occasions –

A business is influenced by a lot of elements. Finding a relationship between's these elements or occasions encourages chiefs to comprehend the issues identified with their business. For instance, the Online business market is anything but another thing today. Each time during certain happy seasons like Christmas or Thanksgiving the diagrams of online organizations go up. Along these lines, state if an online organization is doing a normal of a \$1 million business in a specific quarter and the business ascends in straightaway, at that point they can rapidly discover the occasions comparing to it.

7. Adjustment of information –

The solid purpose of information perception is that the information based on which the data is introduced in a visual configuration can be changed or altered along these lines giving a possibility for the business personals to build up a better correspondence with the crowd.

8. Investigating openings and patterns –

With the huge loads of information present, the business chiefs can discover the profundity of

information in regard to the patterns and openings around them. Utilizing information representation, the specialists can discover the examples in the conduct of their clients, subsequently preparing for them to investigate patterns and open doors for the business.

9. Geological perception –

One of the solid purposes of information perception is geological representation. In this, specialists have the upside of area data giving information to day by day investigation.

Disadvantages of Data Visualization:

1. It gives assessment not exactness –

While the information is exact in foreseeing the circumstances, the perception of similar just gives the assessment. It without a doubt is anything but difficult to change over the robust and protracted information into simple pictorial configuration yet such a portrayal of data may prompt theoretical ends now and then.

2. One-sided –

The essential arrangement of information representation occurs with the human interface, which means the information that turns out to be the base of perception can be one-sided. The individual bringing the information for the equivalent may just think about the significant part of the information or the information that requirements center and may reject the remainder of the information which may prompt one-sided results.

3. Absence of help –

One of the downsides of information perception is that it can't help, which means an alternate

gathering of the crowd may decipher it in an unexpected way.

4. Inappropriate plan issue –

On the off chance that information perception is viewed as such a correspondence. At that point, it must be certifiable in clarifying the reason. In the event that the plan isn't legitimate, at that point, this can prompt disarray in correspondence.

5. Wrong engaged individuals can skip center messages –

One of the issues with information perception is however it could be logical its clearness in clarification is totally subject to the focal point of its crowd.

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Number of bookings for each deposit type



Type of Deposit

CONCLUSION:

- The cancelled vs. non-cancelled bookings ratio for City Hotel was different than Resort Hotel. It
 can be established that the type of hotel can play a factor while determining reasons for
 cancellations.
- The majority of bookings for both hotels had no deposit collected (rather than partial or full). The same majority is demonstrated in cancelled bookings for both hotels as well.
 - o If we just look at non-cancelled bookings data, we can conclude that if people were to cancel more, the majority of the cancellations would be the ones with no deposit collected.
 - o It is possible that guests tend to cancel less after paying some deposit. Some sort of deposit collection (partial or full or credit card detail requirement) at booking may reduce overall cancellations.
- Third-party cancellations are higher than direct hotel bookings, although there is no significant difference in average daily rates.
 - More direct hotel bookings (with offers/discounts) could lead to lower cancellations. The data does not point to an ideal daily rate to use.
- Non-repeat guests make most of the cancelled and non-cancelled bookings (especially weekday bookings).
 - Conversion of non-repeat to repeat loyal customer base (staying during the week) could lead to lower cancellations.
- For non-direct bookings (majority of cancellations City Hotel), months with higher cancellations generally had a higher average daily rate. The same cannot be proved conclusively for direct bookings.

2. APPENDIX

A.SOURCE CODE

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