Airbnb Dataset Solution for reservation made via digital channels

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Table of Content

Airbnb Overview.

Founded in 2008 by Brian Chesky, Joe Gebbia, and Nathan Blecharczyk, Airbnb is a global online marketplace that connects travelers with hosts offering unique accommodations, ranging from shared rooms to entire homes and unconventional stays like treehouses or villas. The platform emerged from a simple idea—renting air mattresses in their San Francisco apartment—and has since revolutionized the travel industry by enabling millions of hosts to monetize their spaces. Guests use Airbnb's website or app to search for lodging based on location, price, and amenities, booking directly with hosts through their digital devices.

Data Source.

Selecting the right dataset is critical for meaningful analysis of Airbnb rentals. This dataset was found to be valuable as unique because it is not only about the lodging or rentals**, but about how digital devices aid in searching, and making a booking to conclude transactions**. Below is an overview of key **Kaggle datasets** and their suitability for different analytical objectives, along with reasons for focusing on Airbnb rental searches.

Data Availability Considerations

- **Data Freshness** – Some datasets (like Inside Airbnb) update regularly, while others may be outdated.
- **Geographical Coverage** – Availability varies by city, with some locations having more detailed data.
- **Granularity** – Some datasets provide daily availability data, while others only offer monthly aggregates.
- **Limitations** – Certain key details (like guest identities or exact booking dates) may be restricted due to privacy policies.
- **Visualization Potential**: The dataset is well structured for building an interactive dashboard in Power Bi to investigate patterns and trends.

Goals

Analyze Search Behavior – Identify patterns in user searches, including popular locations, dates, price ranges, and filters used.

Understand Search-to-Booking Conversion – Determine the percentage of searches that lead to bookings and identify key factors influencing conversion rates.

Identify Drop-off Points – Analyze where users abandon the booking process (e.g., after search, during price review, or at checkout) to improve user experience and reduce drop-offs.

Enhance Mobile & Web Performance – Provide insights into how Airbnb can improve mobile and web platform efficiency to encourage more bookings and reduce drop-offs.

Develop Data-Driven Recommendations – Use findings to recommend strategies for improving platform engagement, reducing booking friction, and increasing overall customer satisfaction.

Objectives

The primary objective of this analysis is to gain a comprehensive understanding of Airbnb reservations made through different digital platforms—mobile phones, mobile apps, and web pages. By analyzing these reservations. The study seeks to identify key trends, user preferences, and behavioral patterns that can provide actionable insights into how users interact with Airbnb's booking system.

This analysis will focus on the following key areas:

1. Booking Trends Across Platforms

- Identify the percentage of reservations made through mobile phones, mobile apps, and web pages to understand which platform is most commonly used.
- Track changes in platform usage over time (e.g., has mobile booking increased compared to desktop?).
- Determine how frequently users book accommodations on each platform and analyze peak booking times.

2. User Preferences Based on Platform

- Compare booking preferences across platforms, such as preferred location, price range, property type, and stay duration.

- Analyze how search filters and sorting options differ based on the device used.
- Identify whether specific user segments (e.g., business travelers vs. vacationers) favor a particular platform.

3. Behavioral Patterns and Engagement

- Investigate differences in session duration and user engagement across platforms (e.g., do mobile users spend less time browsing before booking compared to web users?).
- Study how users interact with Airbnb's interface and whether there are drop-off points in the booking journey.
- Examine whether users who start their search on one platform (e.g., mobile) complete their booking on another (e.g., desktop).

4. Conversion Rates and Booking Completion

- Assess the conversion rates for each platform to determine which channel leads to the most completed bookings.
- Identify common drop-off points (e.g., users abandon bookings at payment on mobile but complete them on the web).
- Determine what factors influence a successful booking across different platforms (e.g., price, Overall Impact and Insights

The findings from this analysis will help Airbnb to:
Optimize its digital platforms to enhance user experience.
Improve marketing strategies by targeting users based on their preferred booking platform. Reduce drop-off rates by addressing platform-specific friction points.
Increase revenue by leveraging insights on pricing, promotions, and platform-based booking behaviors.

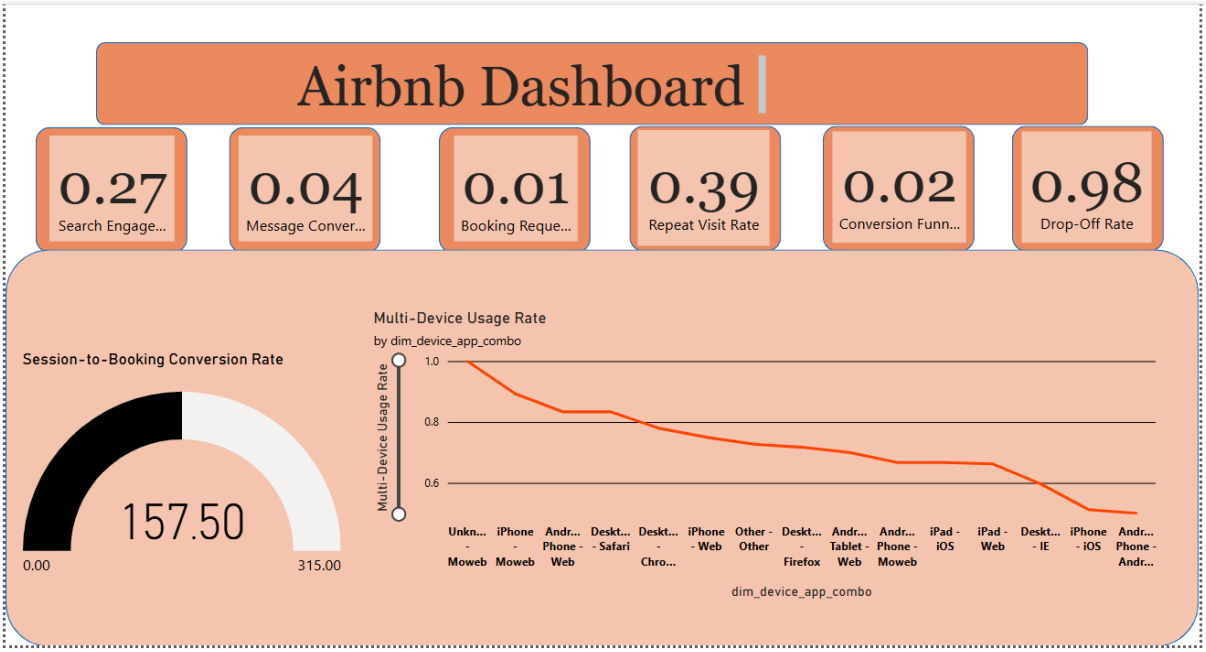
By understanding how users engage with Airbnb on different devices, the company can refine its digital strategy to **increase conversions, improve customer satisfaction, and drive long-term growth**

Key Performance Indicators (KPIs)

Several calculated metrics help Airbnb measure and optimize user engagement and conversion rates for people who use their digital device to interact with Airbnb apps and website. The below KPI would be examined

1. **Booking Request Rate**: Measures the percentage of users who send booking requests after searching.
2. **Conversion Funnel Efficiency**: Tracks how efficiently users move from search to booking.
3. **Drop-Off Rate**: Analyzes where users abandon their journey without completing a booking request.
4. **Message Conversion Rate**: Assesses how often messages to hosts result in bookings.
5. **Multi-Device Usage Rate**: Measures the number of users switching between devices.
6. **Repeat Visit Rate**: Evaluates user retention by measuring return sessions.
7. **Search Engagement Rate**: Indicates how frequently users perform searches, which can correlate with booking intent.
8. **Session-to-Booking Conversion Rate**: A crucial metric that determines the effectiveness of the booking funnel.

VISUALIZATION



Search Engagement Rate:

Insight: Percentage of sessions where users performed a search and eventually made booking after the search

Message Conversion Rate:

Insight: Percentage of sessions where users sent messages to hosts.

Booking Request Rate:

Insight: Percentage of sessions that resulted in a booking request.

Repeat Visit Rate:

Insight: Percentage of users who return for another session.

Conversion Funnel Efficiency:

Insight: How effectively the platform converts searches into booking requests.

Drop-Off Rate:

The percentage of users who abandon the process without making a booking request.

Session-to-Booking Conversion Rate:

Insight: Percentage of unique users who make at least one booking request.

Findings:

1. **Low Engagement in Key Actions**

- **Search Engagement Rate (0.27)** and **Message Conversion Rate (0.04)** indicate that users are searching but are not highly engaged in messaging hosts.
- The **Booking Request Rate (0.01)** is extremely low, suggesting users are hesitant to take the final step.

2. **High Drop-Off Rate (0.98)**

- The vast majority of users abandon the process without completing a booking request. This signals possible friction points in the user journey, such as pricing concerns, lack of trust, or a complicated booking process.

3. **Repeat Visit Rate (0.39) Shows Interest**

- While a significant portion of users return, they may not be converting due to unresolved concerns or a need for more time to make a decision.

4. **Inefficient Conversion Funnel (0.02)**

- Despite users performing searches, the platform struggles to convert them into booking requests. This may point to issues such as lack of compelling listings, pricing mismatches, or a complicated user experience.

Conclusion

In an increasingly competitive market, Airbnb's analytics model stands as a testament to the power of data-driven decision-making. By leveraging structured insights into user behavior, meticulously tracking session data, and prioritizing key engagement metrics, Airbnb not only optimizes its conversion funnel but also fosters meaningful customer retention. This approach enables the platform to refine marketing strategies, streamline the booking experience, and ultimately drive higher guest satisfaction and host profitability. Continuous monitoring and agile adjustments to these KPIs ensure that Airbnb remains responsive to evolving user needs while maintaining its position as a leader in the hospitality industry. The result is a dynamic marketplace where data illuminates the path to growth—delivering seamless experiences for travelers and sustainable success for hosts. As the digital landscape evolves, Airbnb's commitment to analytics-driven innovation will undoubtedly remain central to its ability to thrive in an ever-changing global ecosystem.