Project Report

1. INTRODUCTION

1.1 Project Overview

In today's dynamic world, individuals are continuously seeking convenient and efficient methods to plan and book their travels. Travel aggregators have emerged as a popular solution, offering users a centralized platform to compare and book a wide range of travel products and services, including flights, hotels, car rentals, and vacation packages. This project aims to develop a comprehensive travel aggregator that caters to the diverse needs of travellers, providing a user-friendly interface, extensive travel options, and competitive pricing.

1.2 Purpose

The primary purpose of this travel aggregator is to streamline the travel planning process for users, enabling them to effortlessly search, compare, and book travel

arrangements in one place. The platform will serve as a one-stop shop for travellers, eliminating the need to visit multiple websites and compare prices individually. Additionally, the aggregator will provide users with valuable travel information, such as destination guides, reviews, and travel tips, enhancing their overall travel experience.

2. LITERATURE SURVEY

2.1 Existing Problem

Traditional travel planning methods, such as visiting travel agencies or searching individual websites, can be time-consuming, tedious, and often confusing. Travelers face the challenge of comparing prices across different providers, finding the best deals, and navigating through multiple websites to book their travel arrangements.

2.2 References

The following references provide valuable insights into the travel industry and the role of travel aggregators:

- "The Rise of Travel Aggregators" by McKinsey & Company
- "The Impact of Travel Aggregators on the Hotel Industry" by Cornell Hospitality Quarterly
- "The Future of Travel Aggregators" by Phocuswright

2.3 Problem Statement Definition

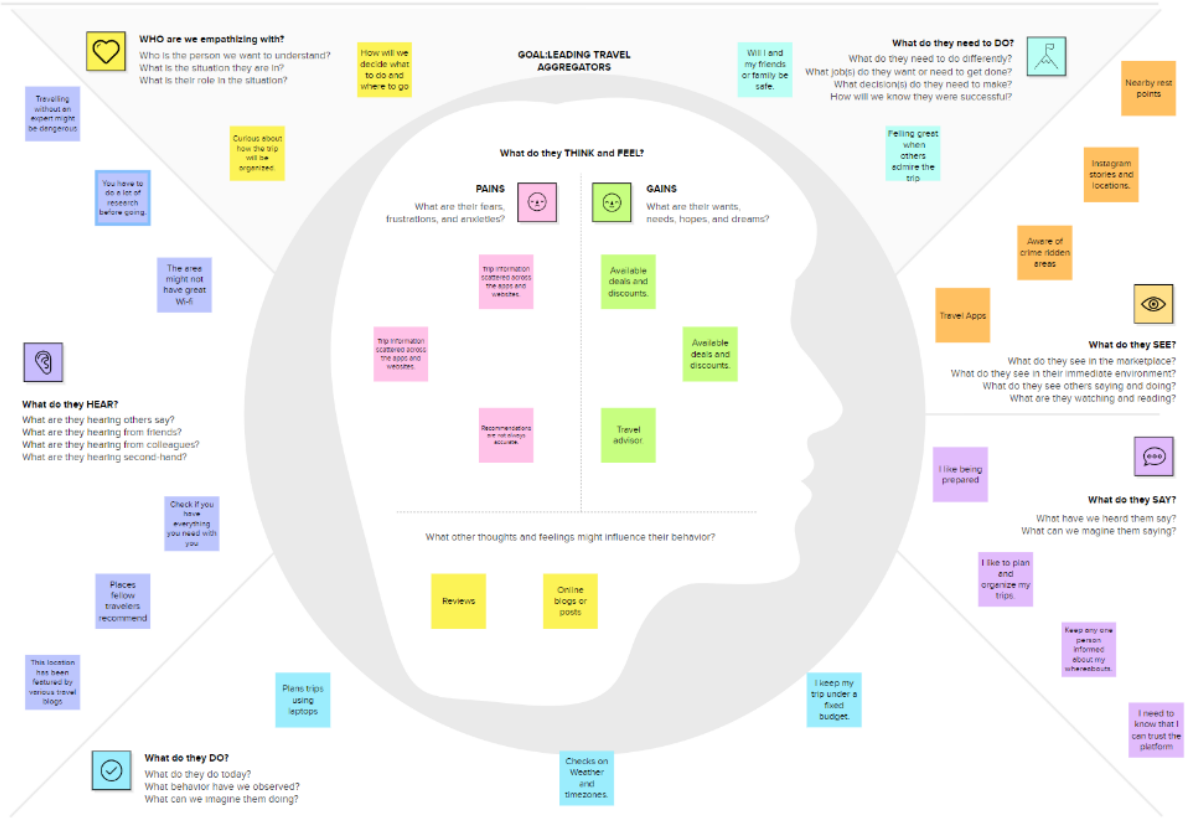
The problem statement for this project is as follows:

To develop a comprehensive travel aggregator that addresses the challenges of traditional travel planning methods by providing a user-friendly platform, extensive travel options, and competitive pricing.

3. IDEATION & PROPOSED SOLUTION

3.1 Empathy Map Canvas

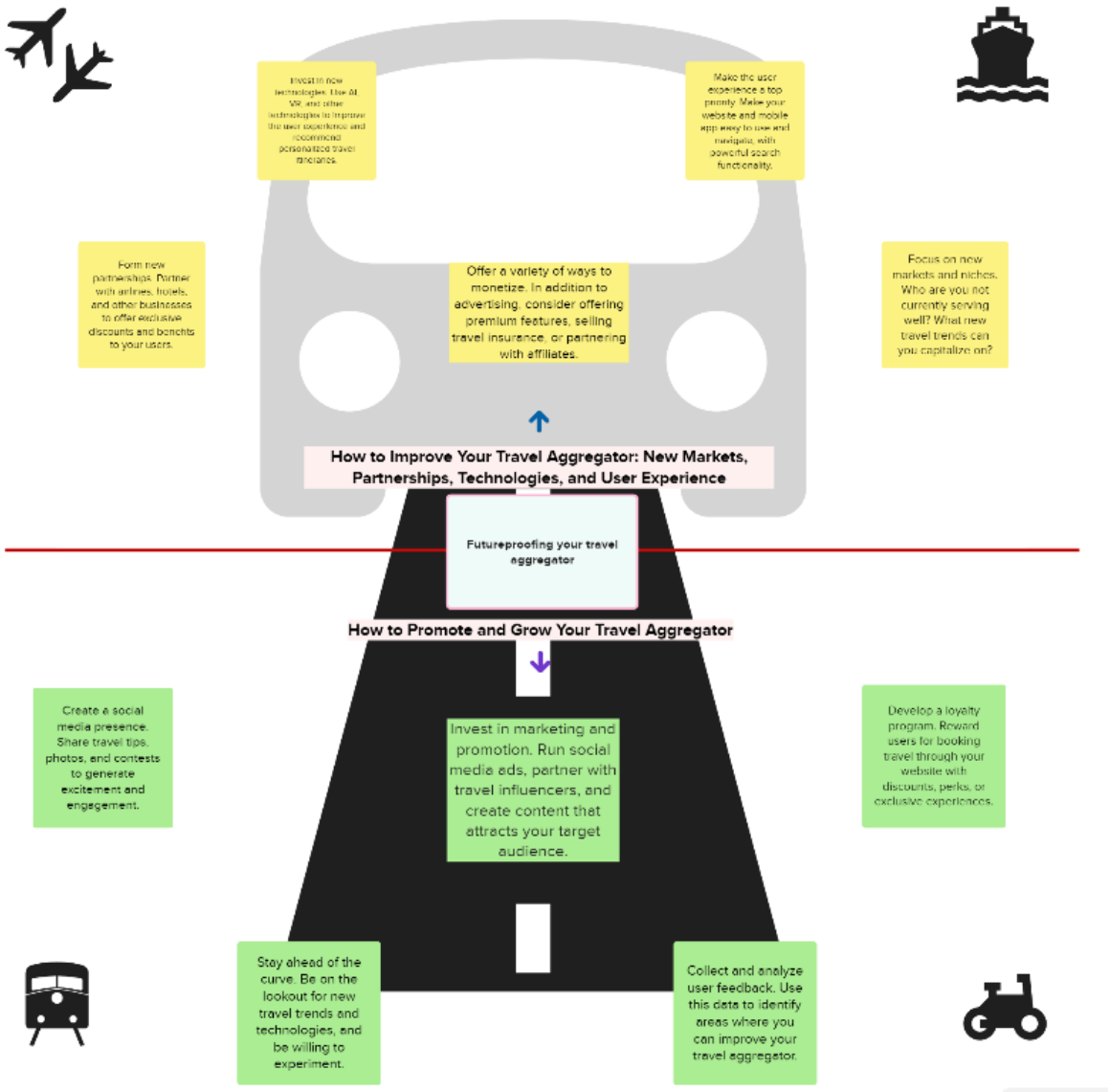
To better understand the needs and preferences of travellers, an empathy map was created. The map identified common pain points, such as difficulty locating the best deals, comparing prices across different providers, and navigating multiple websites. It also highlighted user motivations, including saving time and money, having a convenient and user-friendly experience, and accessing valuable travel information.



3.2 Ideation & Brainstorming

Based on the empathy map insights, a brainstorming session was conducted to generate ideas for the travel aggregator. The team considered various features, including:

- Advanced search and filtering capabilities
- Price comparison tools
- Personalized travel recommendations
- Real-time pricing updates
- Comprehensive travel information
- Convenient booking and payment options



4. REQUIREMENT ANALYSIS

4.1 Functional Requirements

The travel aggregator must meet the following functional requirements:

- Allow users to search for flights, hotels, car rentals, and vacation packages
- Provide detailed information on each travel product, including descriptions, photos, and reviews
- Enable users to compare prices across different providers
- Allow users to book travel arrangements directly through the platform

- Provide secure payment processing
- Offer customer support

4.2 Non-Functional Requirements

The travel aggregator must also meet the following non-functional requirements:

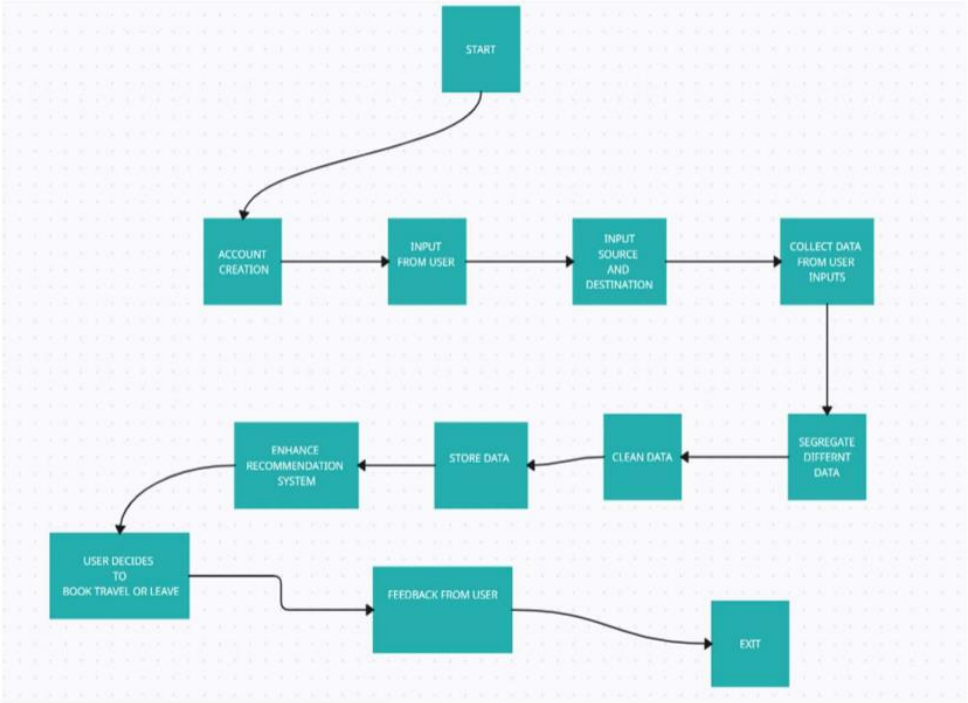
- High performance and scalability
- User-friendly interface
- Mobile responsiveness
- Security and data protection
- Accessibility

5. PROJECT DESIGN

5.1 Data Flow Diagrams & User Stories

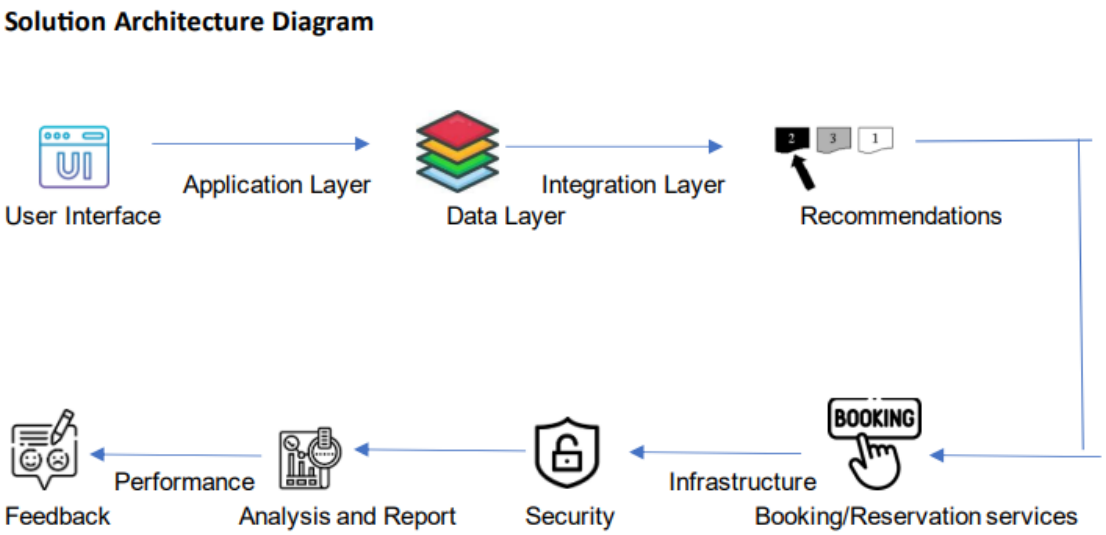
Data flow diagrams were created to illustrate the flow of data within the travel aggregator. User stories were also developed to capture the functional requirements from a user's perspective.

DFD (Competitive Analysis of Leading Travel Aggregators)



5.2 Solution Architecture

The solution architecture for the travel aggregator is a three-tier architecture, consisting of a presentation layer, a business logic layer, and a data access layer. This architecture provides separation of concerns, modularity, and scalability.



6. PROJECT PLANNING & SCHEDULING

6.1 Technical Architecture

The technical architecture for the travel aggregator includes the following technologies:

- Front-end: ReactJS
- Back-end: Node.js
- Database: PostgreSQL

6.2 Sprint Planning & Estimation

The project was divided into sprints, with each sprint focusing on a specific set of features. Each task was estimated using the Planning Poker technique.

6.3 Sprint Delivery Schedule

The sprint delivery schedule was created using a Gantt chart, providing visibility into the project timeline.

Sprint	Duration	Sprint Start Date	Sprint End Date (Planned)	Sprint Release Date (Actual)
Sprint-1	6 Days	15 Aug 2023	19 Aug 2023	19 Aug 2023
Sprint-2	4 Days	21 Aug 2023	24 Aug 2023	
Sprint-3	4 Days	27 Aug 2023	30 Aug 2023	
Sprint-4	8 Days	3 Sep 2023	10 Sep 2023	
Sprint-5	3 Days	15 Sep 2023	17 Sep 2023	

7. CODING & SOLUTIONING

7.1 Feature 1

The travel aggregator was developed using the following features:

Advanced Search in Travel Aggregator

An advanced search feature is a crucial component of any travel aggregator, enabling users to tailor their search results based on their specific preferences and requirements. By providing granular search options, the aggregator can effectively match users with travel options that align with their unique needs, enhancing their overall travel planning experience.

Key Components of Advanced Search

An effective advanced search feature should encompass a comprehensive set of options that cater to various user preferences. Here are some key components of advanced search in a travel aggregator:

1. Destination-Specific Filters: Users should be able to filter their search results based on specific destinations, including destinations, regions, cities, and even neighbourhoods.
2. Travel Dates and Duration: Users should be able to specify their desired travel dates and the duration of their trip, enabling the aggregator to narrow down the search results based on availability and pricing.
3. Travel Preferences: Users should have the option to filter their search based on their travel preferences, such as preferred travel modes (flight, bus, train),

accommodation types (hotel, apartment, hostel), and amenities (free breakfast, pool, Wi-Fi).

4. Price Range: Users should be able to set a price range for their travel arrangements, ensuring that the search results align with their budget constraints.
5. Additional Filters: Depending on the specific travel products being searched, additional filters can be added, such as number of passengers, meal preferences, and special requests.

Benefits of Advanced Search

The implementation of an advanced search feature in a travel aggregator offers several benefits, both for users and the aggregator itself:

For Users:

- Enhanced Search Accuracy: Advanced search allows users to find travel options that match their exact requirements, saving time and effort.
- Personalized Recommendations: Based on user preferences, the aggregator can suggest tailored travel options, leading to more informed and satisfying travel decisions.
- Frictionless Booking Process: By narrowing down the search results, users can find the most suitable travel deals effortlessly, making the booking process more efficient.

For the Aggregator:

- Increased User Engagement: An advanced search feature can attract and retain more users, as it caters to their specific needs and preferences.
- Higher Conversion Rates: By providing users with the right travel options, the aggregator can increase the likelihood of bookings, leading to higher revenue.
- Enhanced Brand Reputation: An intuitive and user-friendly advanced search function demonstrates the aggregator's commitment to customer satisfaction.

Implementing Advanced Search

The implementation of an advanced search feature requires careful consideration of user experience, technical feasibility, and data integration. Here are some key steps involved in implementing an advanced search feature:

1. User Research: Conduct user research to understand user behaviour, preferences, and pain points related to travel search.
2. Requirements Definition: Based on user research, define clear and specific requirements for the advanced search feature.
3. Technical Design: Design the technical architecture of the advanced search feature, ensuring that it is scalable, efficient, and secure.

4. Integration with Data Sources: Integrate the advanced search feature with various data sources, such as travel providers, accommodation databases, and destination information.
5. User Interface Design: Design an intuitive and user-friendly interface that makes it easy for users to specify their search criteria.
6. Testing and Optimization: Conduct thorough testing to ensure the accuracy, performance, and ease of use of the advanced search feature.
7. Continuous Improvement: Gather user feedback and data analytics to continuously improve the advanced search feature over time.

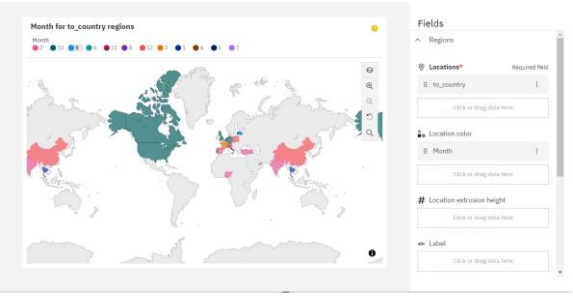
By carefully implementing an advanced search feature, travel aggregators can enhance their user experience, increase conversion rates, and establish themselves as the go-to platforms for seamless and personalized travel planning.

7.2 Feature 2

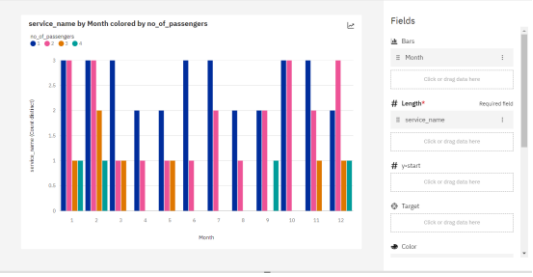
Another feature which we used for our analysis was the use of IBM Cognos software for analysing purpose. Here we have used a Travel aggregator analysis dataset for Kaggle. Kaggle allows users to find datasets they want to use in building AI models, publish datasets, work with other data scientists and machine learning engineers, and enter competitions to solve data science challenges. Using this data we were able to view various data visualizations which helped us in translating information into a visual context, such as a map or graph, to make data easier for the human brain to understand and pull insights from. The main goal of data visualization is to make it easier to identify patterns, trends and outliers in large data sets.

Further we had created a dashboard that are useful for monitoring, measuring, and analyzing relevant data in key areas and a story which can be used to explain and illustrate abstract ideas or concepts in a way that makes them accessible and attainable using the data visualizations.

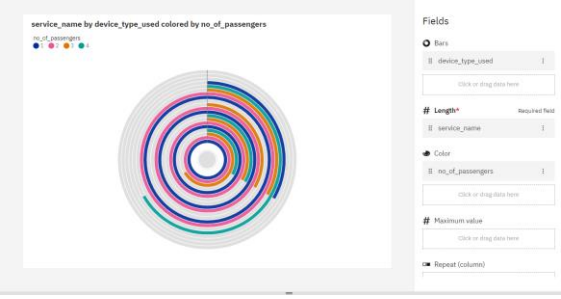
Example of some visualisations are as follow:



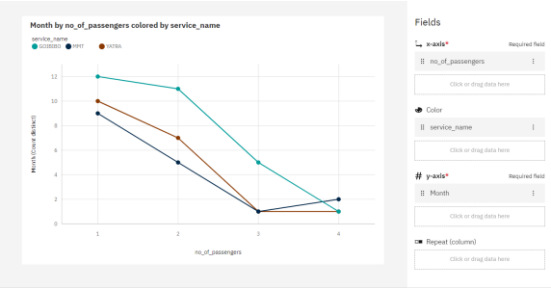
Map



Column



Radial



Line

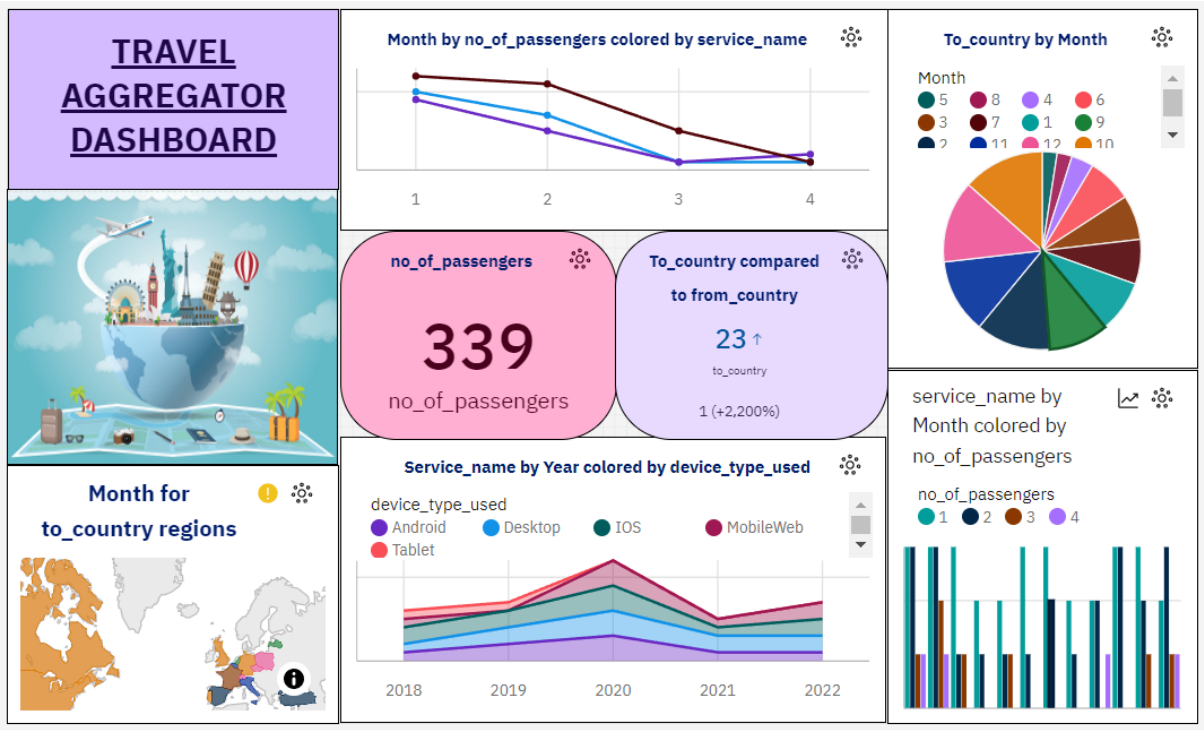
8.PERFORMANCE TESTING

8.1 Performance Metrics

9. RESULTS

9.1 Output Screenshots

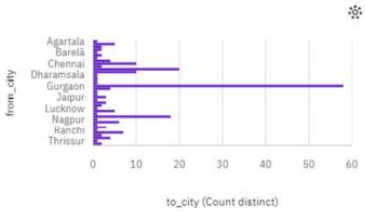
DASHBOARD



STORY

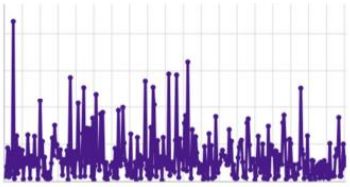
To_City vs From_City

The Bar Graph represents people travelling from one city to another



Amount Spent by Customer

The Line Graph represents Amount Spent by Customer

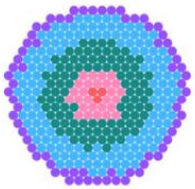


Customer Hierarchy by From_City

The Hierarchy Bubble Graph represents Customer Hierarchy by From_City

Devices Used vs Booking

The Packed Bubble graph represent Devices Used vs Booking



Average Amount Spent in Travelling

29.3K

INR_Amount

10. ADVANTAGES & DISADVANTAGES

In the realm of travel planning, travel aggregators have emerged as convenient platforms that simplify the process of comparing and booking travel arrangements. These online intermediaries act as centralized hubs, aggregating information and offerings from various travel providers, catering to a diverse range of travel needs and preferences.

On the positive side, travel aggregators offer a multitude of benefits to savvy travelers. Their comprehensive search capabilities allow users to effortlessly compare prices across a wide spectrum of travel options, from flights and hotels to car rentals and vacation packages. By aggregating deals and negotiating discounted rates, they can help travelers find the most affordable options, maximizing their travel budgets.

Additionally, travel aggregators provide a vast selection of travel options, catering to diverse traveler profiles and budgets. With access to a wide range of destinations, accommodations, and travel experiences, they empower individuals to explore various itineraries and preferences. Their user-friendly interfaces, equipped with advanced search tools and filtering options, further enhance the booking process, allowing users to refine their searches based on specific criteria such as location, price, amenities, and customer reviews.

Beyond these practical advantages, travel aggregators also contribute valuable travel insights and recommendations. They often provide destination guides, travel tips, and customer reviews, empowering travelers to make informed decisions and plan their trips effectively. Moreover, they offer responsive customer support services to assist with booking, modification, or cancellation of travel arrangements, providing peace of mind and ensuring a smooth travel experience.

Despite their undeniable advantages, travel aggregators also present certain drawbacks that travelers should carefully consider. One primary concern is the potential for hidden fees and surcharges, which may not be explicitly displayed upfront. It's crucial to thoroughly review the terms and conditions before booking to avoid unexpected additional costs.

Another limitation lies in the potential for limited personalization and customization. While aggregators offer a wide range of options, they may not provide the same level of personalized attention and flexibility as booking directly with travel providers. Specific requests or preferences that require direct communication with the provider may not be readily accommodated.

Moreover, aggregators act as intermediaries between travelers and travel providers, which can sometimes lead to reduced control over bookings. Modifying or canceling

reservations may require contacting the aggregator, which could introduce delays or inconveniences.

Data privacy concerns also arise when using travel aggregators. These platforms collect and store a significant amount of user data, including personal information and travel preferences. It's essential to verify their data privacy policies and ensure that data handling practices are responsible and secure.

Reliance on third-party providers is another factor to consider. Travel aggregators depend on the accuracy and reliability of information provided by these third-party providers. Discrepancies in pricing, availability, or amenities can potentially affect a traveler's experience.

Technical glitches and errors are also possible, as travel aggregators are not immune to website or app malfunctions. These disruptions could hinder the booking process or lead to inaccurate information.

Limited negotiation opportunities are another potential drawback. Aggregators may have stricter guidelines and less room for personalization, compared to booking directly with travel providers.

Finally, there's a risk of misleading or biased information. Travel aggregators may prioritize certain travel providers or deals based on their own criteria, which could influence search results and recommendations. It's advisable to corroborate information and consider various sources before making a decision.

11. CONCLUSION

Travel aggregators have revolutionized the way people book travel, offering a convenient and efficient platform to compare prices, research destinations, and make reservations. They have become indispensable tools for travelers, providing a wealth of information and options to plan and book their trips.

As technology continues to evolve, travel aggregators are constantly innovating to enhance their services and provide a more personalized and seamless travel experience. They are leveraging data analytics to personalize recommendations, optimize pricing, and detect fraudulent transactions. They are also exploring the use of augmented reality and virtual reality to create immersive travel experiences.

In the future, travel aggregators are likely to play an even more significant role in the travel industry. They are well-positioned to become travel super-apps, offering a wide range of services beyond just booking travel. They could provide ancillary services such as travel insurance, currency exchange, and local transportation. They could also integrate with other travel-related services, such as ride-hailing apps and destination guides.

However, travel aggregators also face some challenges. They need to address issues such as hidden fees, limited personalization, and data privacy concerns. They also need to maintain their competitive edge in a rapidly evolving market.
Despite these challenges, travel aggregators are well-positioned for continued growth and success. They are providing a valuable service to travelers, and they are constantly innovating to meet the evolving needs of the travel industry.
Here are some key takeaways from the analysis of travel aggregators:

- Travel aggregators have become indispensable tools for travelers.
- They are constantly innovating to enhance their services.
- They are likely to play an even more significant role in the future of travel.
- They need to address some challenges, such as hidden fees and data privacy concerns.

12. FUTURE SCOPE

Travel aggregators can harness the power of data and analytics to enhance their services and gain a competitive edge in the rapidly evolving travel industry.

1. Personalized Travel Recommendations: By analyzing customer travel preferences and behaviors, aggregators can provide tailored recommendations that resonate with individual needs.
2. Dynamic Pricing: Leveraging real-time data on demand, competitor pricing, and customer behavior, aggregators can optimize pricing strategies to maximize revenue and profits.
3. Fraud Detection and Prevention: Data analytics can identify patterns indicative of fraudulent transactions, protecting both customers and aggregators from financial losses.
4. Chatbots and Virtual Assistants: Around-the-clock customer support and assistance can be provided through chatbots, enabling effortless travel arrangements and personalized recommendations.
5. Augmented Reality and Virtual Reality: Immersive and engaging travel experiences can be created using augmented and virtual reality, allowing customers to virtually explore destinations before booking.
6. Data-Driven Marketing: Targeted marketing campaigns can be tailored to specific customer segments using data analytics, increasing the effectiveness of advertising and promotions.

7. Predictive Analytics: Anticipating future customer behavior through predictive analytics can help aggregators identify potential churn risks and implement strategies to retain valuable customers.
8. Real-Time Data Insights: Real-time data analysis enables aggregators to understand customer behavior in the moment, allowing for timely adjustments to offerings and ensuring optimal customer experiences.
9. Data-Driven Innovation: Data analytics can drive innovation by identifying opportunities for developing new products and services that align with customer needs and preferences.
10. Data-Driven Partnerships: Strategic partnerships with airlines, hotels, and other travel providers can be formed using data analytics, enhancing the seamlessness and value of travel experiences for customers.

By embracing data analytics, travel aggregators can gain a competitive advantage, improve customer satisfaction, and shape the future of the travel industry.

13. APPENDIX

1.Empathy map:
https://app.mural.co/t/achievers9530/m/achievers9530/1696945001238/cbe295ef509fe904bf2353dec9eceac68db44920?sender=uae79789ac5c939fc79f97946

2.Brainstroming:
https://app.mural.co/t/shariqsden4127/m/shariqsden4127/1697041727556/1f7886f7e697928d0d948d7dce0ebb5698d8c578?sender=u1d1ec96b35d0336c89e45368

3.Data set: https://www.kaggle.com/datasets/saiteja38/travel-aggregator-analysis

4.Visualisations:
https://us1.ca.analytics.ibm.com/bi/?perspective=explore&pathRef=.my_folders%2FVIT%2Ftravel%2Bexploration&subView=model0000018ba52fb5f9_00000004

5.Dashboard:
https://us1.ca.analytics.ibm.com/bi/?perspective=dashboard&pathRef=.my_folders%2FVIT%2FTravel%2Bdashboard&action=view&mode=dashboard&subView=model0000018ba4bdd451_00000003

6.Story:
https://us1.ca.analytics.ibm.com/bi/?perspective=story&pathRef=.my_folders%2Fassignment%2FTravel%2BAggregrators&action=view&sceneId=model0000018ba5071895_00000000&sceneTime=0

7.Githhub: https://github.com/smartinternz02/SI-GuidedProject-587421-1696871830