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AIRLINE DATA ANALYSIS

Report

Exploring Insights From Synthetic Airline Data Analysis With Qlik

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Exploring Insights From Synthetic Airline Data Analysis With Qlik

In this project, the synthetic airline data simulates various aspects of airline operations, including flight schedules, passenger demographics, ticket sales, and performance metrics. The objective is to leverage Qlik's analytical capabilities to uncover patterns, trends, and correlations within this data, aiding in decision-making processes for airlines, airports, and related stakeholders.

AIRLINE DATA ANALYSIS

PROJECT REPORT

INTRODUCTION

OVERVIEW

Airlines can use data on passenger demand, travel patterns, and market trends to identify profitable routes and new routes, optimize their flight schedules, and fit capacity to demand.

Data analytics enables airlines to evaluate their profitability and make data-driven decisions. It makes data analyzing and decision-making very easy for the airline companies and helps them to extract useful knowledge from a large set of data.

PURPOSE

The main aim of this project is to analyze a large dataset of airlines and find useful information from it through various kinds of visualizations and stories.

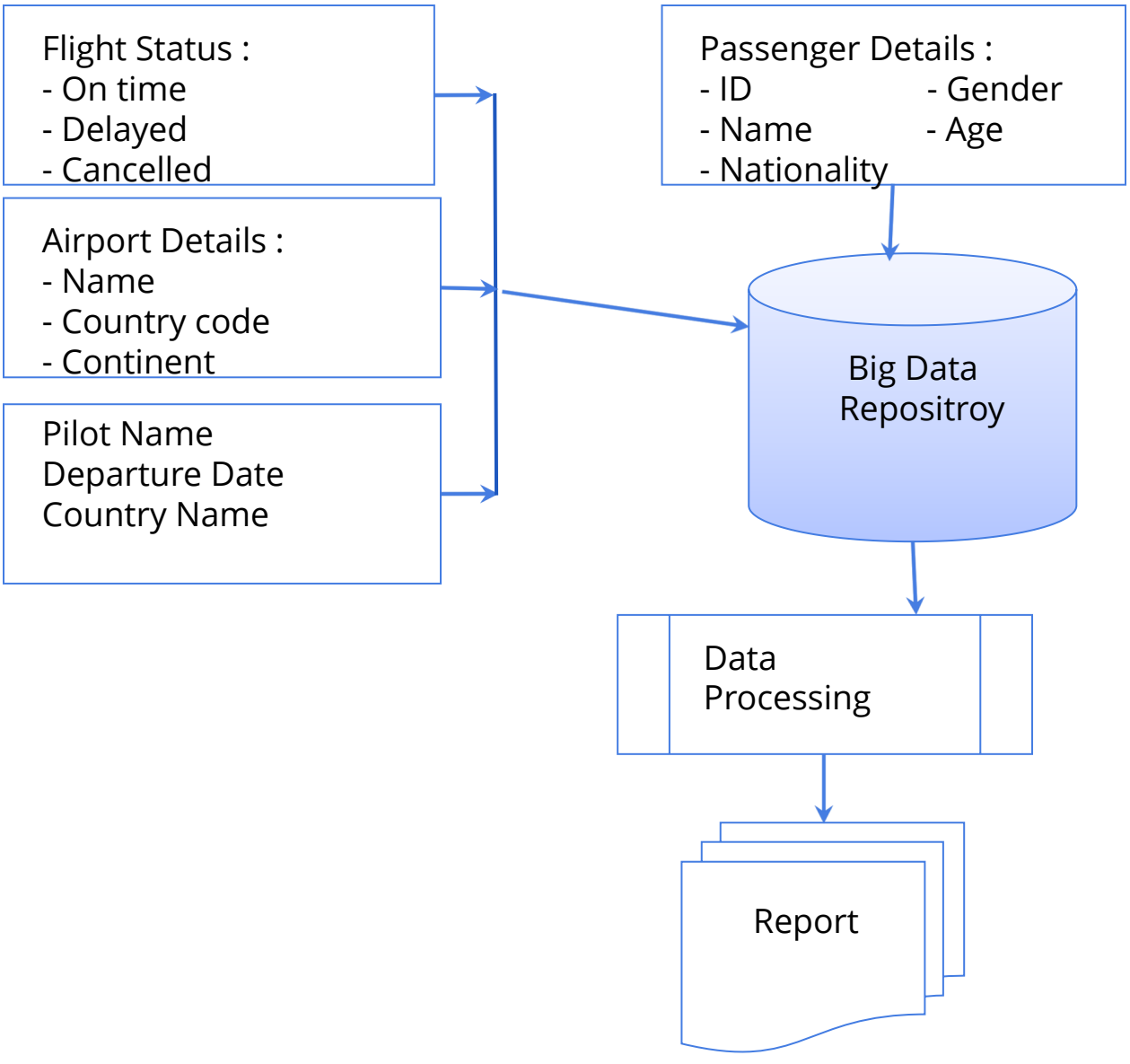
It will give the information in graphical representation that means in various form of charts and graphs and KPI values which will help in easy understanding of the visuals.

Also, it will help the company analyze their services and policies and their impact on their customers/passengers. The company can also analyze the historical data of many years to find various details and information. As well as the current data, it is also used in the analysis

to compare the difference between then and now.

TECHNICAL ARCHITECTURE

It refers to the way of implementing the analysis process on data to extract the useful information from it.



PROBLEM UNDERSTANDING

BUSINESS PROBLEM

The main problem is the large volume of data that is to be analyzed and processed and how to arrange data and remove redundancies and null or incorrect values.

There are several other problems listed as follows:

- Efficiency
- Cost Saving
- Minimizing the disruptions
- Security
- Resources optimization
- Price optimization
- Delays and cancellations
- Maintenance

BUSINESS REQUIREMENTS

Business requirement is the kind of information that is needed to setup a prototype of any business. It helps in understanding how to work and what the output may look like.

It is very important to gather and understand the requirements first before starting to work on the project.

Here are some requirements :

- Data collection

- Forecasting
- Route Analysis
- Customer experience
- Management
- Maintenance
- Marketing
- Revenue Management
- Safety and security

DATA COLLECTION

COLLECT THE DATABASE

Data collection is the first step for any project. We need data to perform actions on it and obtain the desired result.

The dataset in this project is downloaded from kaggele.

The dataset consist of a table containing various attributes.

The dataset has the following attributes:

- **Passenger ID** - Unique identifier for each passenger
- **First Name** - First name of the passenger
- **Last Name** - Last name of the passenger
- **Gender** - Gender of the passenger
- **Age** - Age of the passenger
- **Nationality** - Nationality of the passenger
- **Airport Name** - Name of the airport where the passenger boarded

- **Airport Country Code** - Country code of the airport's location
- **Country Name** - Name of the country the airport is located in
- **Airport Continent** - Continent where the airport is situated
- **Continents** - Continents involved in the flight route
- **Departure Date** - Date when the flight departed
- **Arrival Airport** - Destination airport of the flight
- **Pilot Name** - Name of the pilot operating the flight
- **Flight Status** - Current status of the flight (e.g., on-time, delayed, canceled).

CONNECT DATABASE WITH QLIK SENSE

In this we load the dataset downloaded into the qlik to create app and use it.

The steps to load dataset into qlik sense are :

1. Open an app or create a new one
2. Open the data load editor from the top toolbar drop-down menu
3. Click Create new section in the left menu, and give the section a name
4. Expand the Data sources panel
5. Under DataFiles, click Select data
6. Upload and select the data file
7. Click Insert script
8. Click Load data in the upper right corner

DATA PREPARATION

PREPARE THE DATA FOR VISUALIZATION

In this, we prepare the data by cleaning, modifying, and converting it into a format that can be analyzed easily and support the decision-making process.

It includes :

- Data cleaning
- Removing null values
- Removing redundancy
- Make sure that data is reliable
- Handling missing values
- Handling incorrect data
- Adding or removing features from the dataset

DATA VISUALIZATION

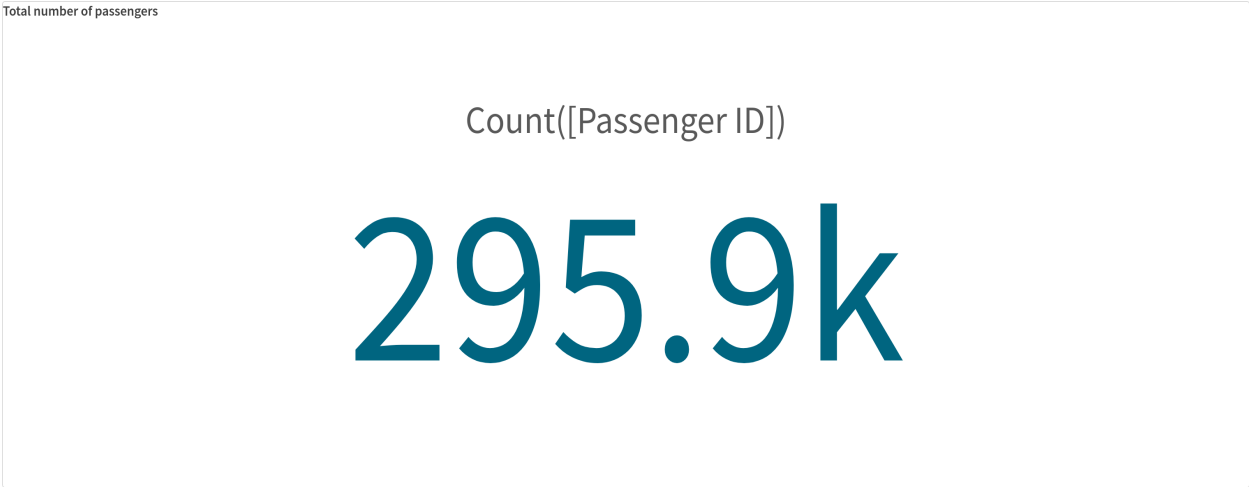
It is the process of generating insights from dataset and using them.

The visualization allows data to be represented in form of graphs, charts, and KPI's that make understanding of data very easy.

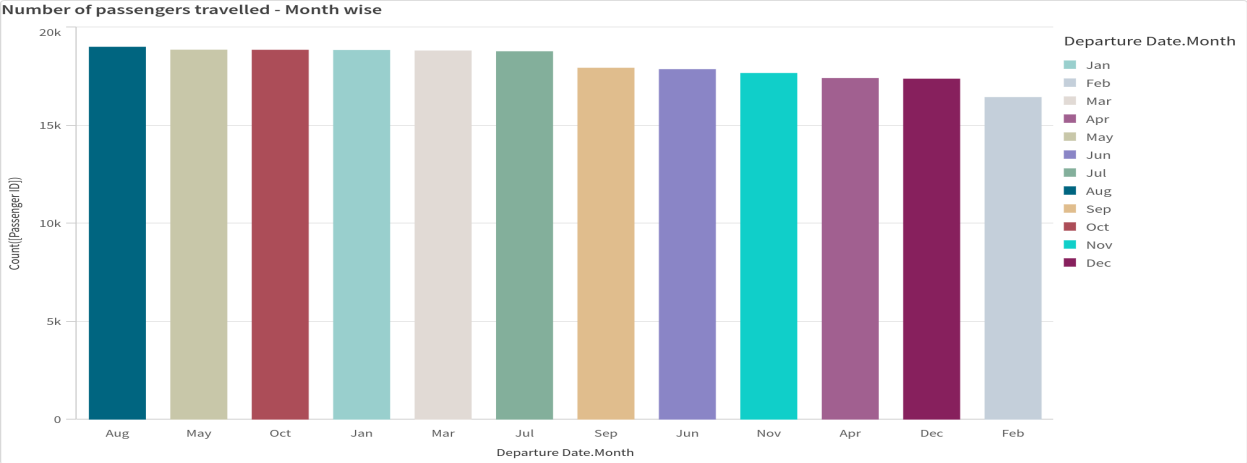
It allows to make clear and effective decisions and also the result can be found in a more precise form.

Some data visualizations made from airline datasets are as follows:

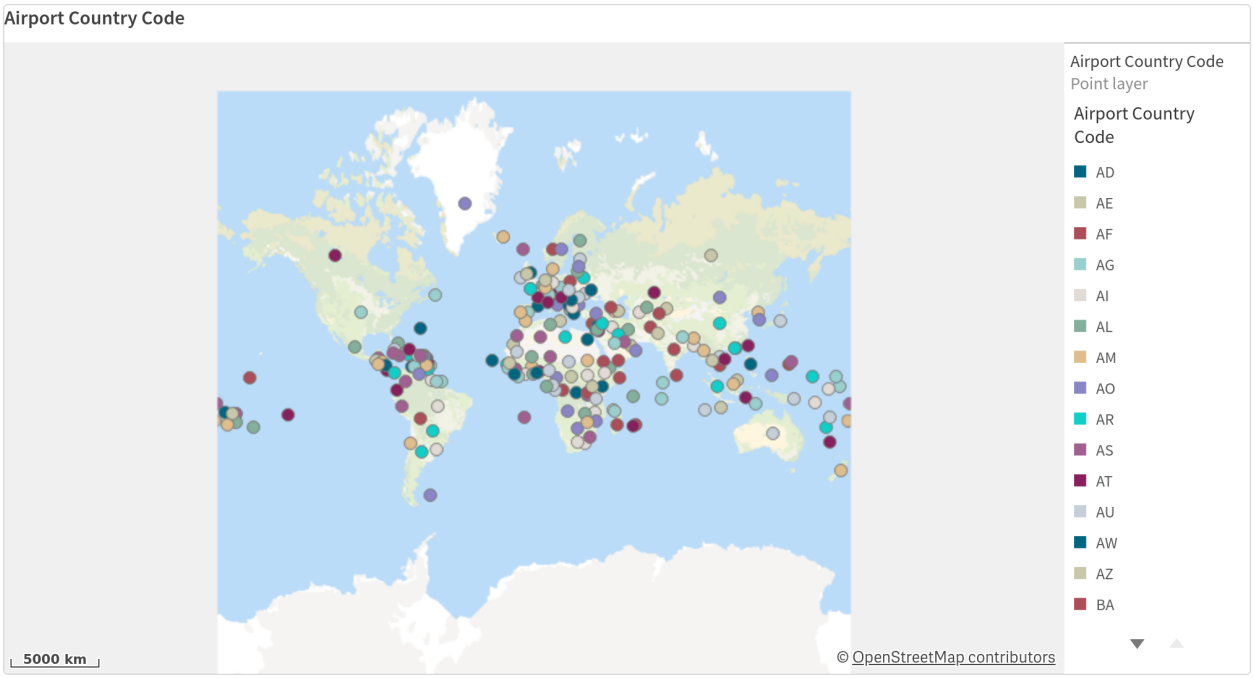
VISUALIZATIONS



(It shows the total number of passengers travelling)



(It shows the number of passengers traveled - month wise)

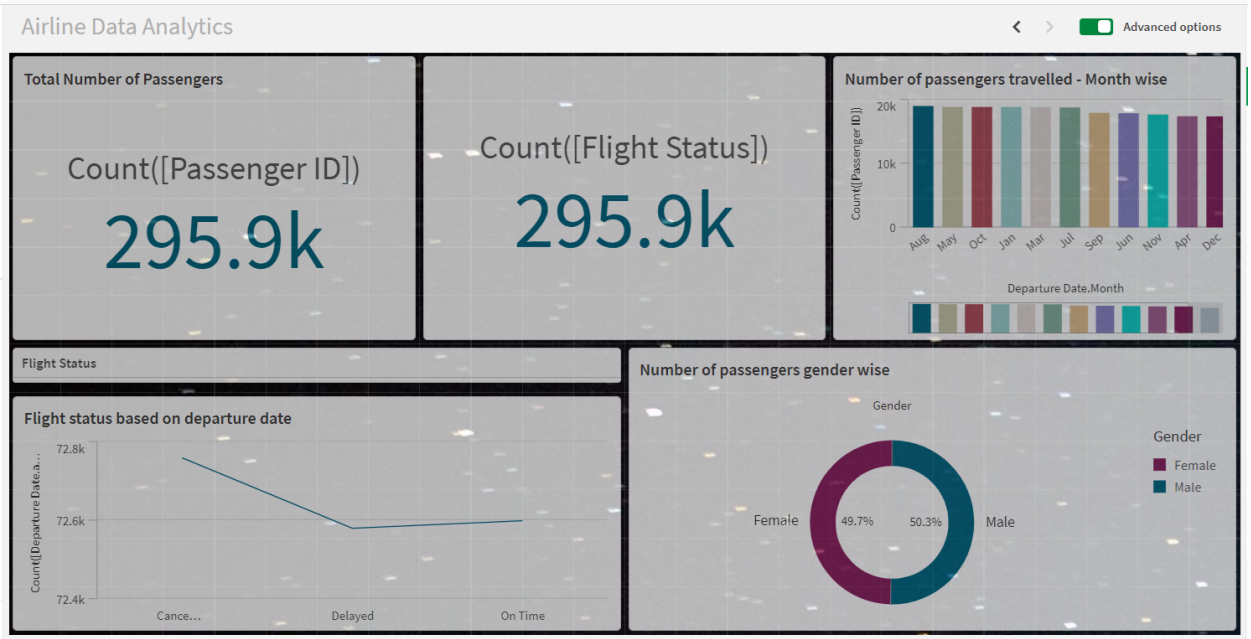


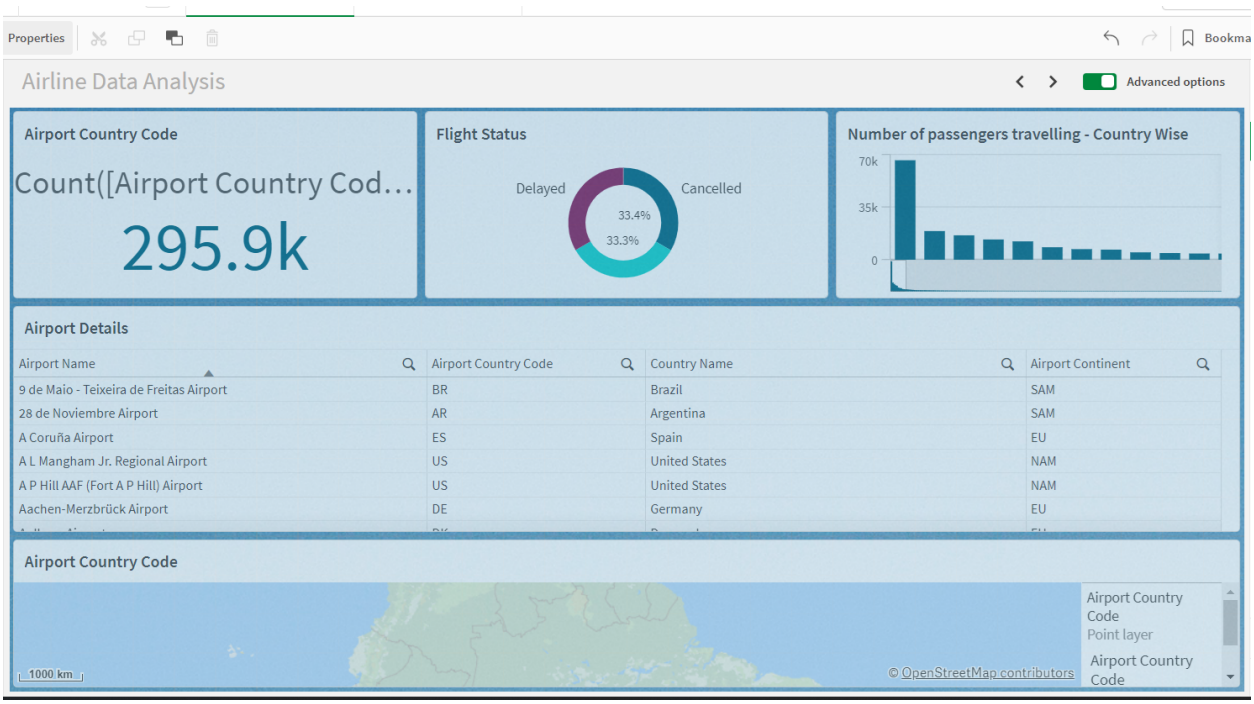
(It shows the different airports in different countries.)

DASHBOARD

A Qlik Sense dashboard is an interactive report or dashboard that can be created using Qlik Sense, a business intelligence and data visualization solution. Qlik Sense dashboards can include charts, graphs, and other components, and can be used to analyze data, perform visualizations, and collaborate with others.

RESPONSIVE AND DESIGN OF DASHBOARD





(These are the dashboards representing different visualizations using different kinds of graphs, charts

and different KPI values.)

REPORT

REPORT CREATION

Report creation is a task that is performed at the end of development. It is the description of how the project is developed and how it is implemented.

Report creation is the process of organizing and presenting information and evidence for a specific purpose to a particular audience.

A report includes a title, your name, the date, a table of contents with appropriate page numbers and headings, a summary, introduction, body and conclusion.

Here are some steps to create a report:

1. Consider the report's objective
2. Determine what your audience needs to see
3. Decide what information to include
4. Gather data and visuals
5. Draft the report's content
6. Review and edit the report

PERFORMANCE TESTING

It is the way of evaluating how a system performs in terms of responsiveness and stability under a particular workload.

AMOUNT OF DATA RENDERED

It refers to the amount of data that has been generated, processed, or displayed by a system.

It involves transforming data into a format that is more presentable.

In this project, the amount of rendered data is in the form of graphs and charts.

UTILIZATION OF DATA FILTERS

In Qlik Sense, you can apply filters to visualizations, data from files, and create custom filters.

Data filters are tools used to selectively display, analyze, or manipulate data based on specific criteria or conditions.

It helps to display data in more specified form and helps to find only the essential data based on a particular conditions.

The filter used in this project are :

Flight Status :

- On time
- Delayed
- Cancelled

Gender :

- Male
- Female