Exploring Insight From Synthetic Airline Data Analysis With Qlik

1 INTRODUCTION

1.1 Overview:

"Exploring Insights From Synthetic Airline Data Analysis with Qlik",a powerful data visualization and business intelligence tool. By using Qlik's capabilities, we aim to uncover valuable insights related to airline operations,passenger demographics, flight performance, and overall business trends. The insights drawn from this analysis can help airline companies improve operational efficiency, enhance customer satisfaction, and optimize business strategies.

1.2 Purpose:

The uses of this project are Enhanced Operational Efficiency,Better Customer Experience, Financial Performance Optimization,Strategic Planning and Decision-Making, Regulatory and Compliance.

We can achieve Comprehensive Visibility,Actionable Insights,Operational Improvements,Customer- Centric Strategies,Revenue Growth, and Enhanced Collaboration.

1.3 Technical Architecture:

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2 Define Problem/Problem Understanding

2.1 Specify the business problem:

Airlines operate in a complex and competitive environment, where efficiency, customer satisfaction, and financial performance are critical to success. However, the sheer volume of data generated by airline operations can make it challenging to exact meaningful insights and drive informed decision-making. This project aims to address the following key problems:

1. Operational Inefficiencies
2. Customer Experience Challenges
3. Financial Performance Issues
4. Data Management and Analysis

2.2 Business Requirements:

1. Data Requirements

- Comprehensive Dataset
- Flight Information
- Passenger Information
- Financial Data
- Operational Metric
- Data Quality

2. Technical Requirements:

- Data Integration Platform
- Data Import
- Data Transformation
- Interactive Dashboards

2.3 Literature Survey:

The analysis of airlines data using Business Intelligence tool like **"Qlik"** is an area of growing interest due to complex airline operation and the vast amount of data generated. This literature survey reviews key studies and articles that provide insights into the methodologies,benefits, and challenges of using Business Intelligence tools in the airlines industry.

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3 Data Collection :

3.1 Collect the dataset :

This is the process of gathering required dataset from various sources that is used to analyze,create visualizations, and utilize Insight advisor to clear queries and dashboards. It helps to increase the performance of the business and customer satisfaction. In the project "Exploring Insights From Synthetic Airline Data Analysis With Qlik" dataset is collected from the "Kaggle".

3.2 Connect Data with Qlik Sense :

The data which we have extracted from the "Kaggle" should be upload in the qlik platform. After that, we can perform our required analysis.

Data Preparation :

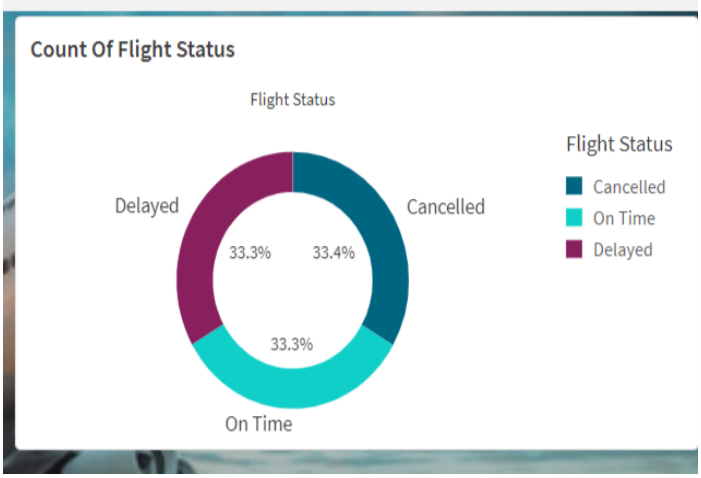
It includes data processing and cleaning. Both will help us to understand the given data and interpret the necessary parameters.

Data Processing : The process of elaborate given data by adding specific columns, which will help us to prepare more visualizations.

Data Cleaning : In this process, we can remove unnecessary data,hyphens,empty spaces, etc. This makes our data efficient to use and easy to understand.

5. Data Visualizations :

Activity 5.1.1 : Donut Chart of Flight Status.



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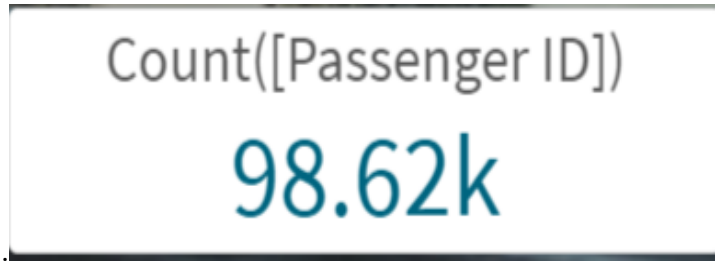
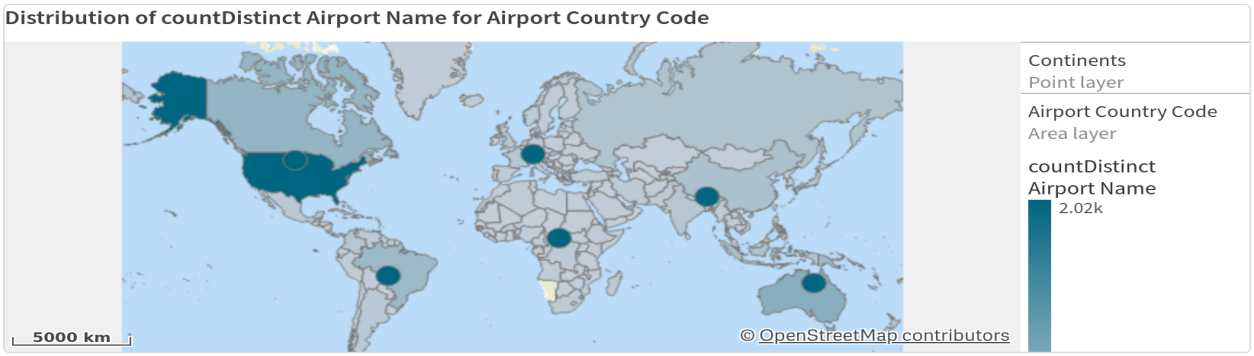
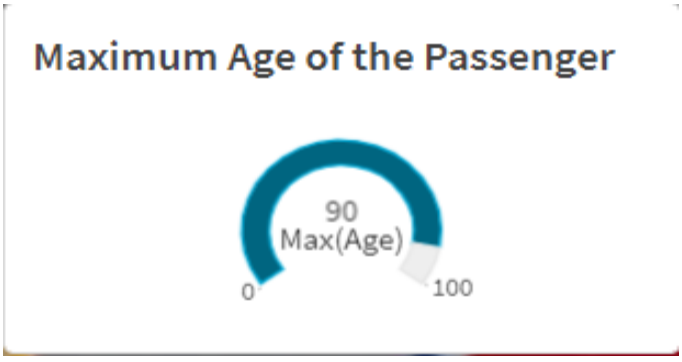
Activity 5.1.2 : KPI Represents the Total Count of the Passengers.



Activity 5.1.3 : Count of Distinct Airport Names for Airport Country Code



Activity 5.1.4 : Maximum age of the passenger among all the passengers.



Activity 5.1.5 : Minimum age of the passenger among all the passengers.

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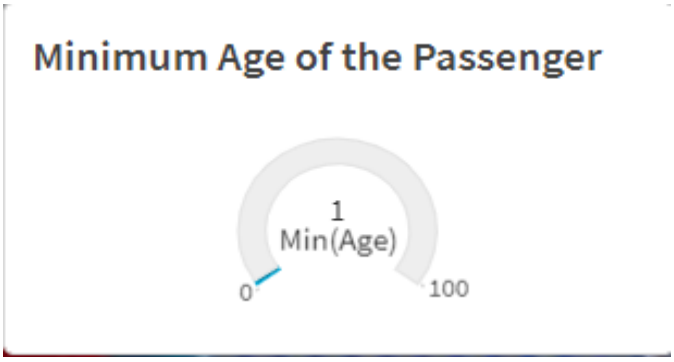
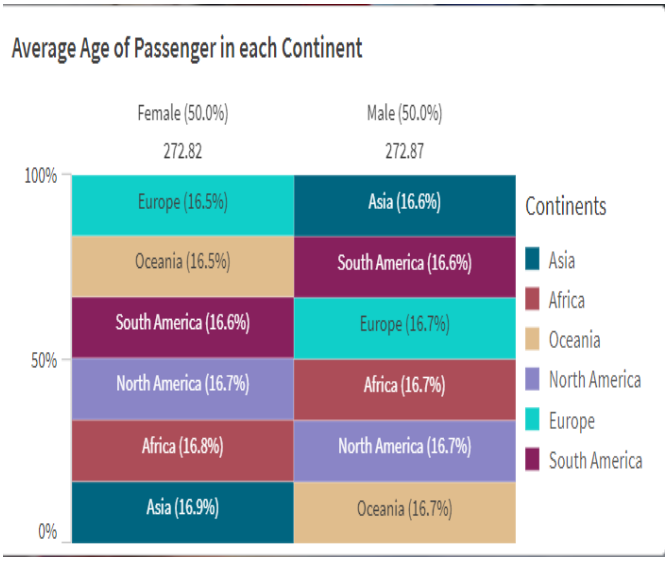
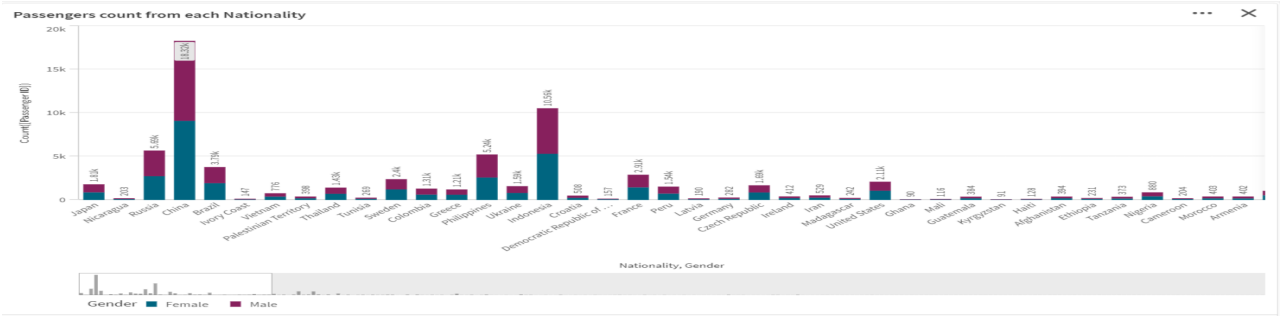


Activity 5.1.6 : Average Age of Passenger in each Continent.



Activity 5.1.7 : Passengers count from each Nationality



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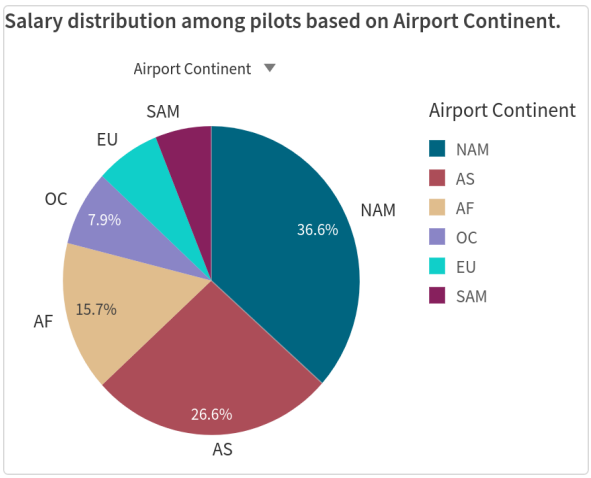
Activity 5.1.8 : Number of pilots of each Category.

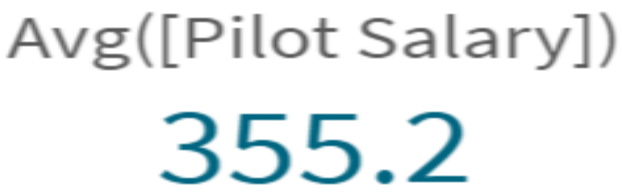
Number of pilots of each Category

Pilot Category	Count([Pilot Category])
Totals	**98619**
Expert	29667
Junior	36919
Senior	32033

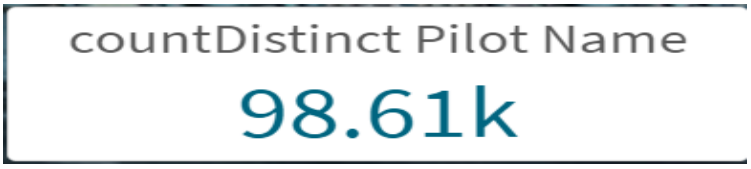
Activity 5.1.9 : Salary distribution among pilots based on Airport continent



Activity 5.1.10 : Average Pilot Salary.



Activity 5.1.11 : Distinct Number of Pilots



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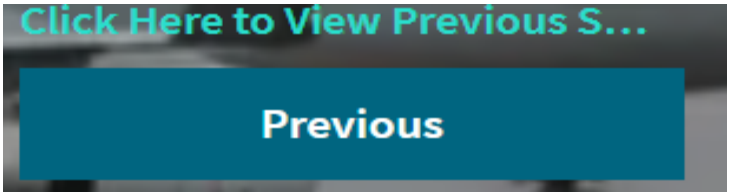
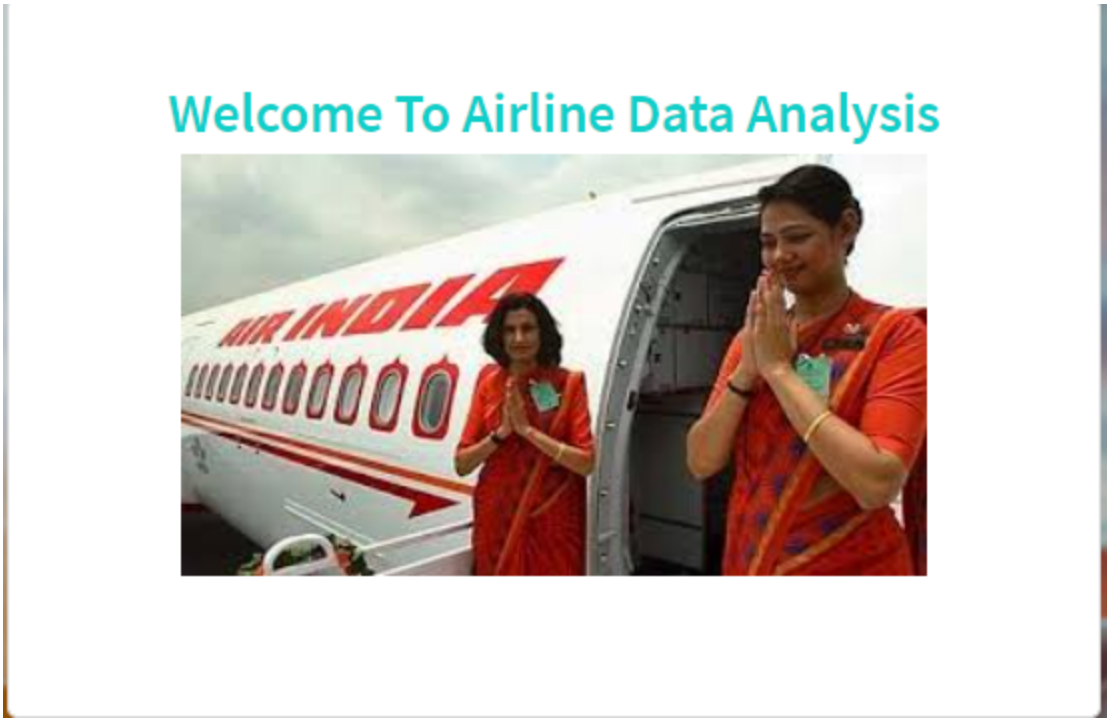
Apart from the above visualizations, we use some charts like buttons,text&images in order to make the dash board more attractive.

Activity 5.1.12 : Button to move to the next Dashboard.

Activity 5.1.13 : Button to move to previous Dashboard.



Activity 5.1.14 : Text&image filter is used to insert a image related to the topic and some text.



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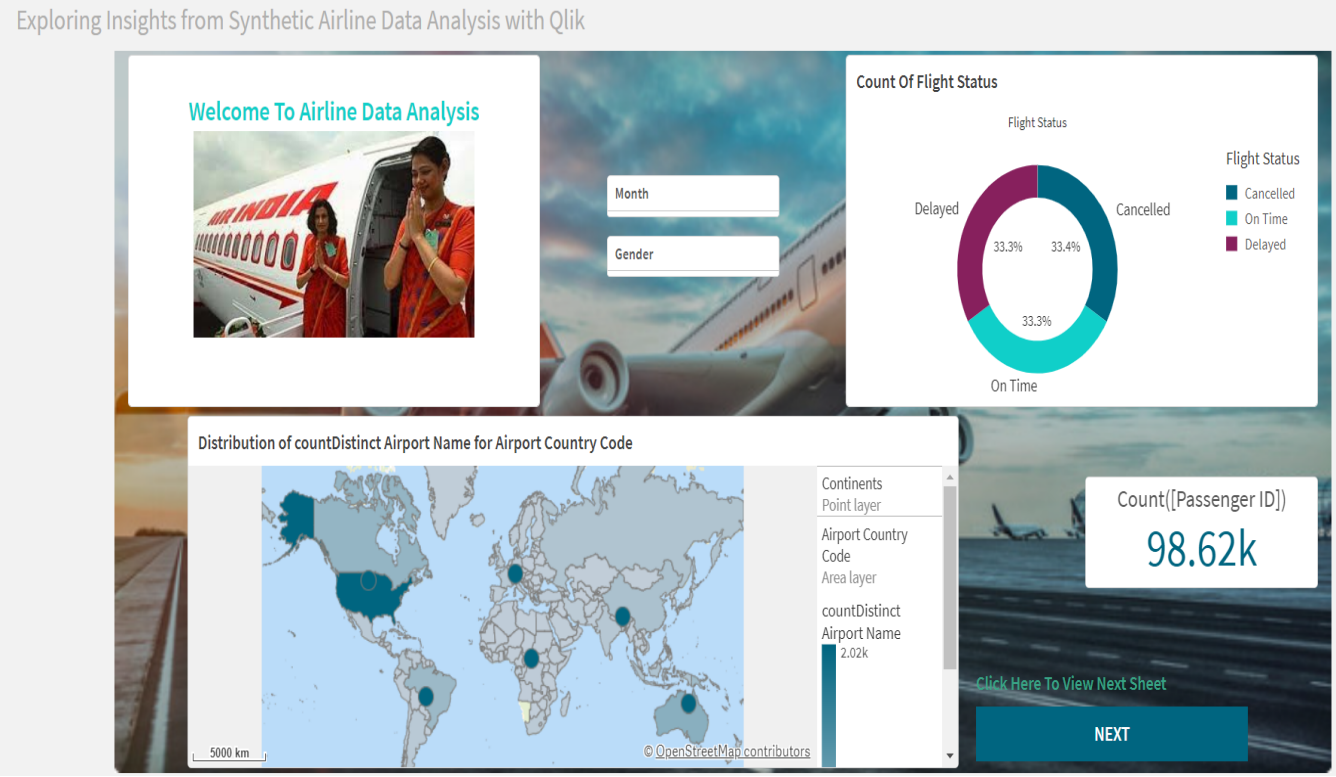
6 Dash Boards :

Dashboards are created using visualizations, which I have created using the data provided. It provides a clear glimpse of the data which we are analyzing. In order to make my dashboard more effective, I have inserted a background image. With help of qlik cloud we can make attractive dashboards.In the below three dashboards I have used donut chart, filter pane, KPI's, buttons,gauge,table, mekko charts, bar charts, pie charts etc.

Dash Board 6.1 :



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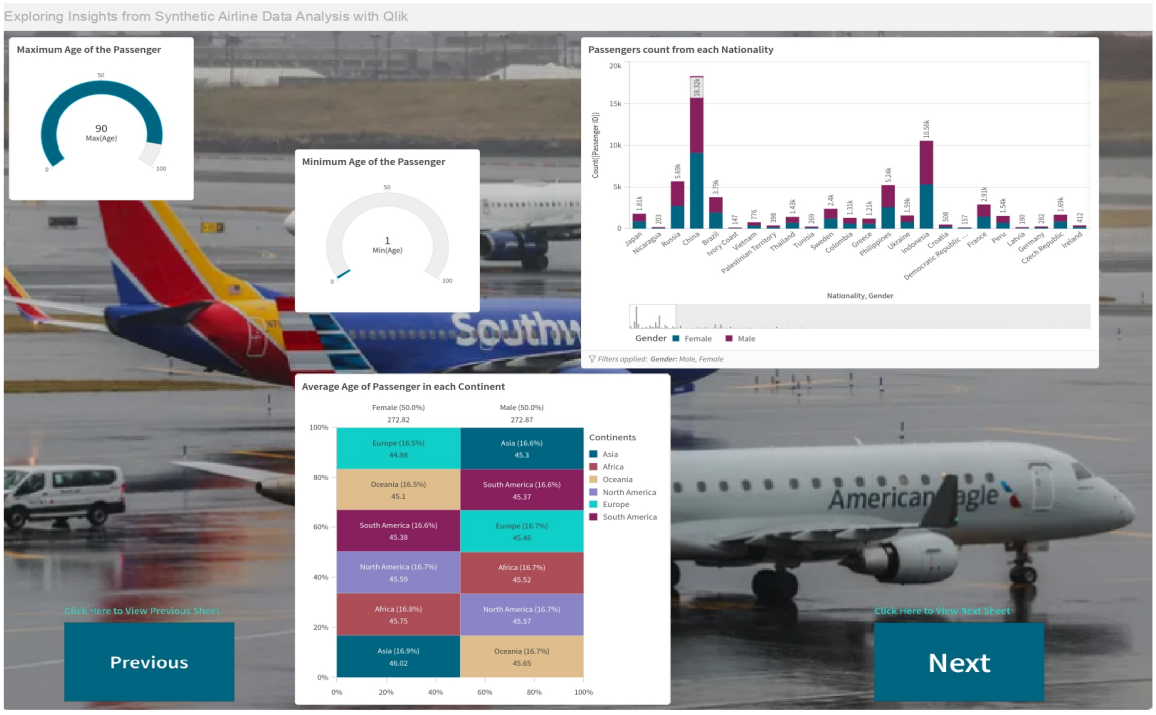
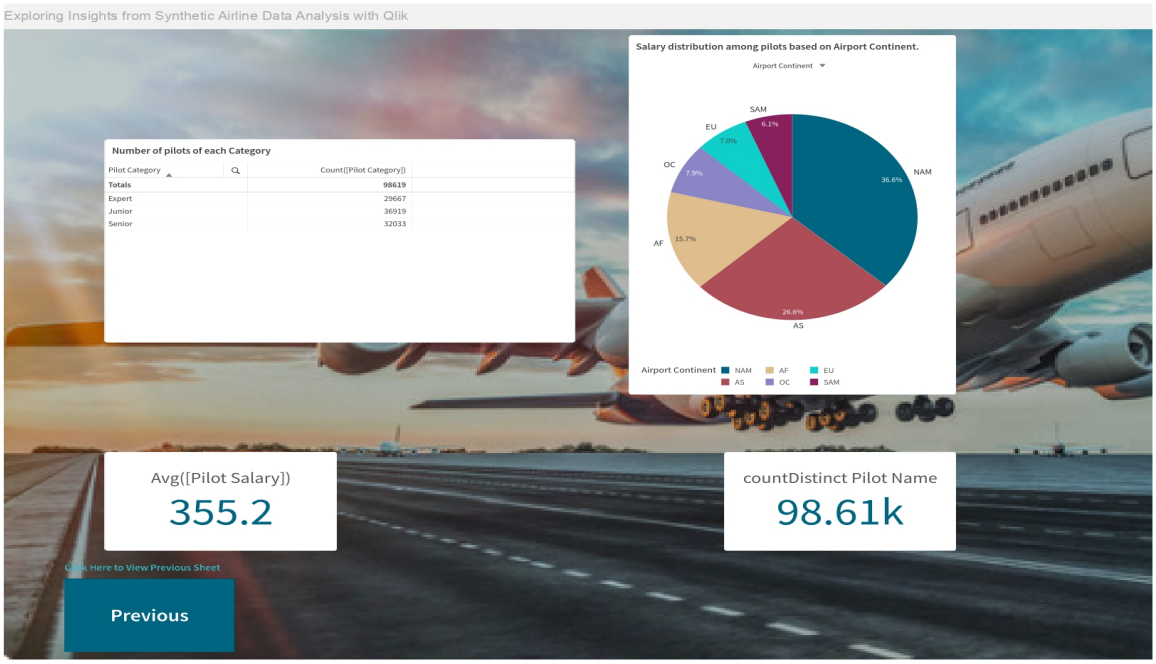
Dash Board 6.2 :



Dash Board 6.3 :



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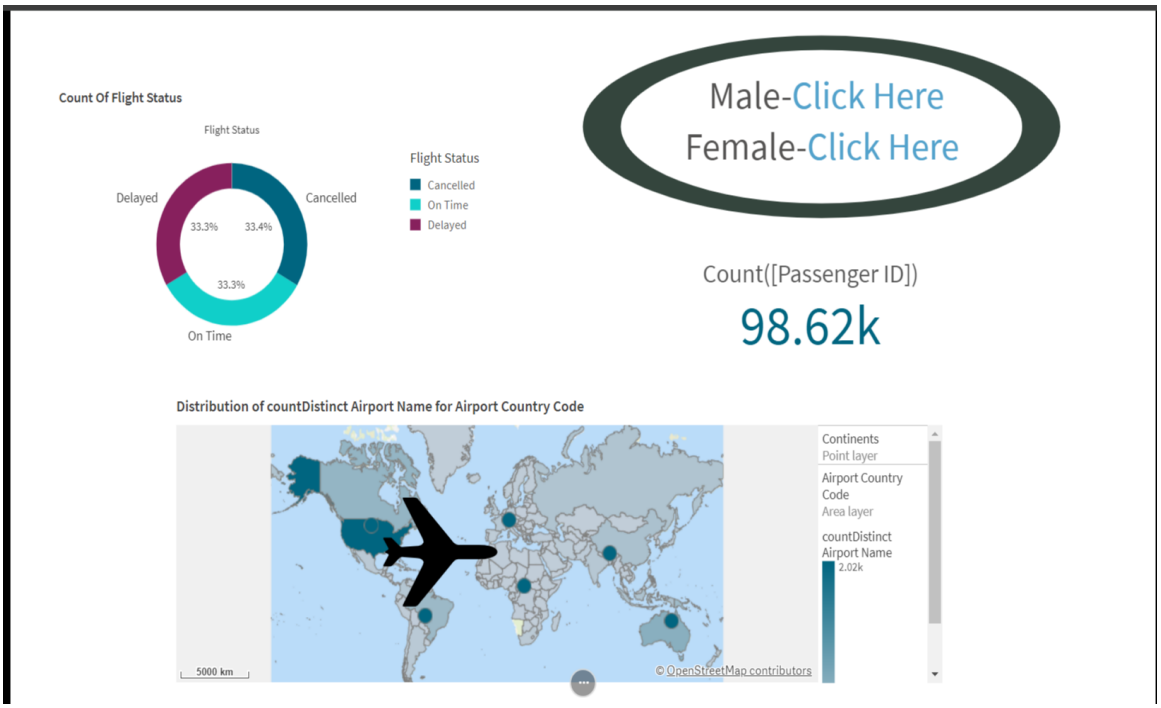
7 Report :

Story telling is just like a power point presentation. In story telling, we can also include links to other filters. By adding links, we can retrieve more data in a small area.

- In-order to make story telling we have to take snap shot of each visualization and bookmark the required filters.
- Now narrate each visualization by using the snap shots.

7.1 Report Creation :



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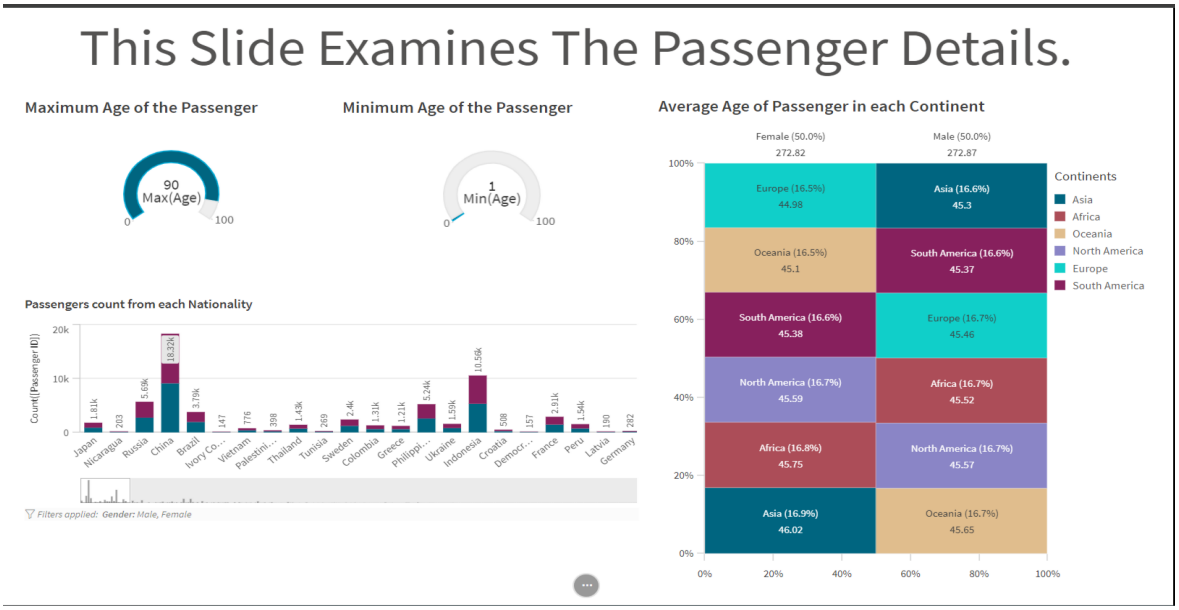

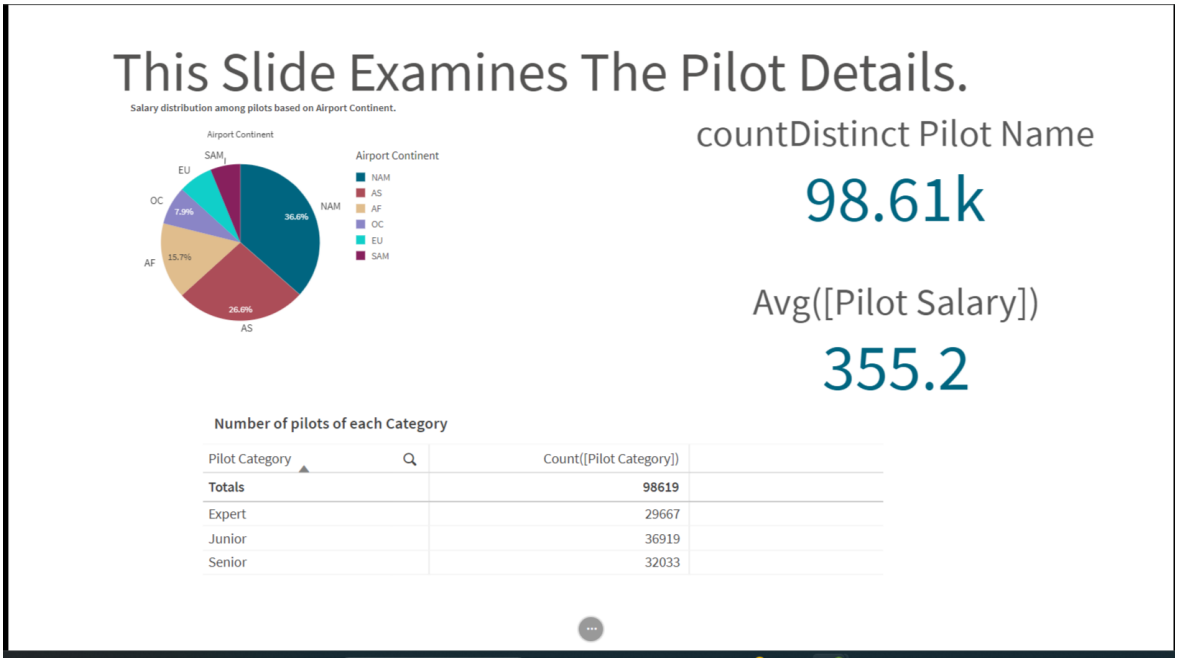

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8. Performance Testing

8.1 Amount of Data Rendered :

"Amount of Data rendered" refers to the data that we extract from the given source into our Analytical tools. The fields that I have extracted from the source called "Kaggle" are listed below.

- Age
- Airport Continent
- Airport Country Code
- Airport Name
- Arrival Airport
- Continent
- Country Name
- Departure Date
- First Name
- Flight Status
- Gender
- Last Name
- Month
- Nationality
- Passenger ID
- Pilot Category
- Pilot Name
- Pilot Salary
- Year

During Pre-processing of data, I have added some expressions in order to add some fields. They are shown below.

Expression 1 : Month([Departure Date])
Expression 2 : Year([Departure Date])
Expression 3: If(Match(Continents, 'Europe', 'South America', 'Oceania'),'$200',If(Match(Continents,'North America'),'$400','$500'))
Expression 4: If([Pilot Salary]='$500', 'Expert',If([Pilot Salary]='$400','Senior','Junior'))

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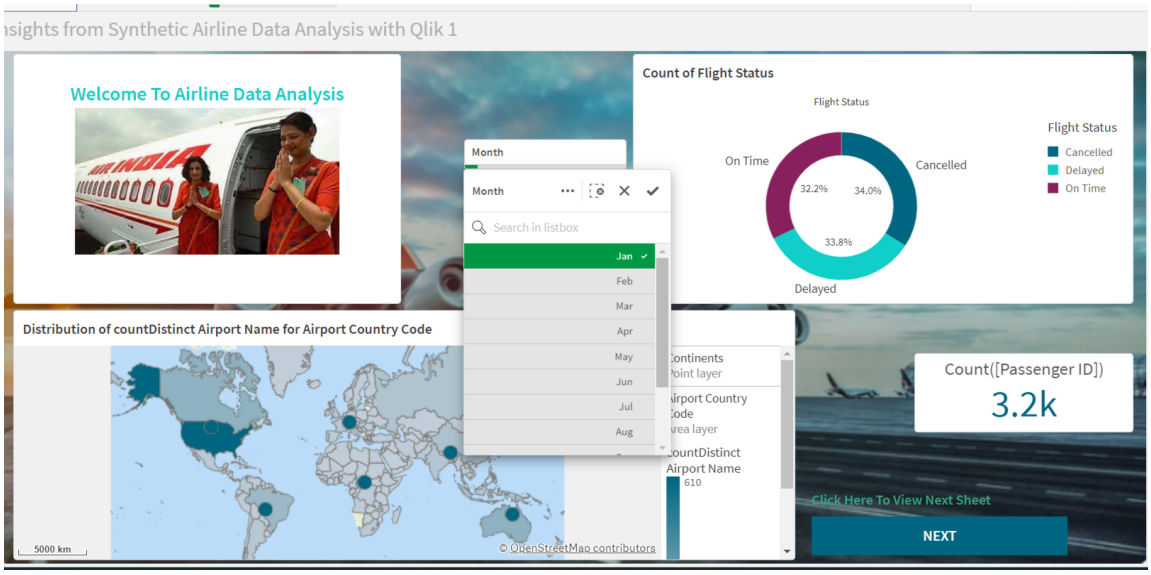
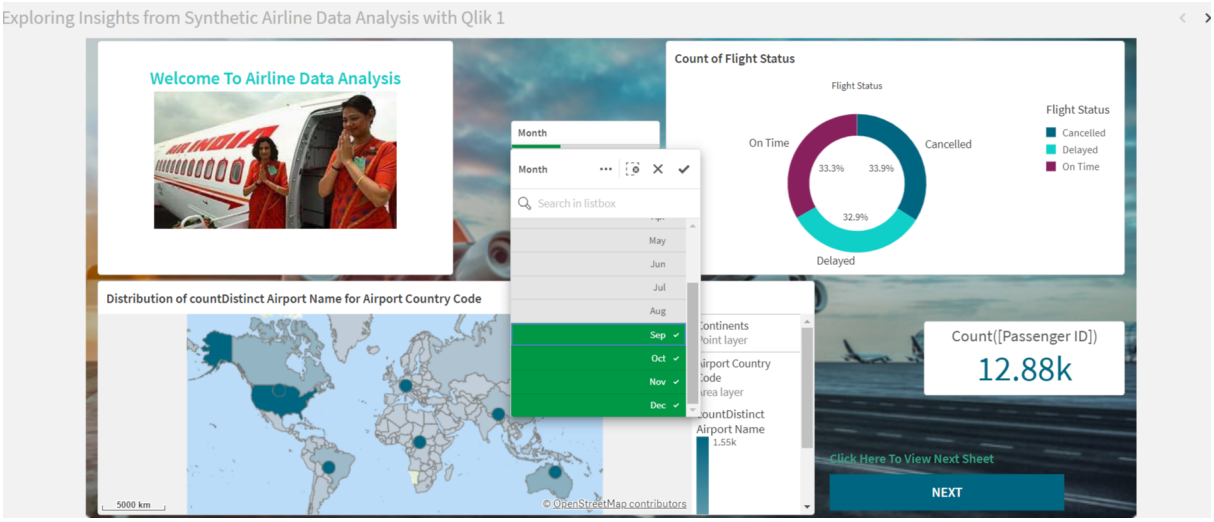
8.2 Utilization of Filters.

8.2.1 Filter based on Month



In the above image, we can see that the "January " Month filter is applied. According to the filter changes take place in Donut chart and KPI.



In the above Image, we can see that "September,October,November, and December" Months filters are applied. According to that changes take place in Donut chart and KPI.

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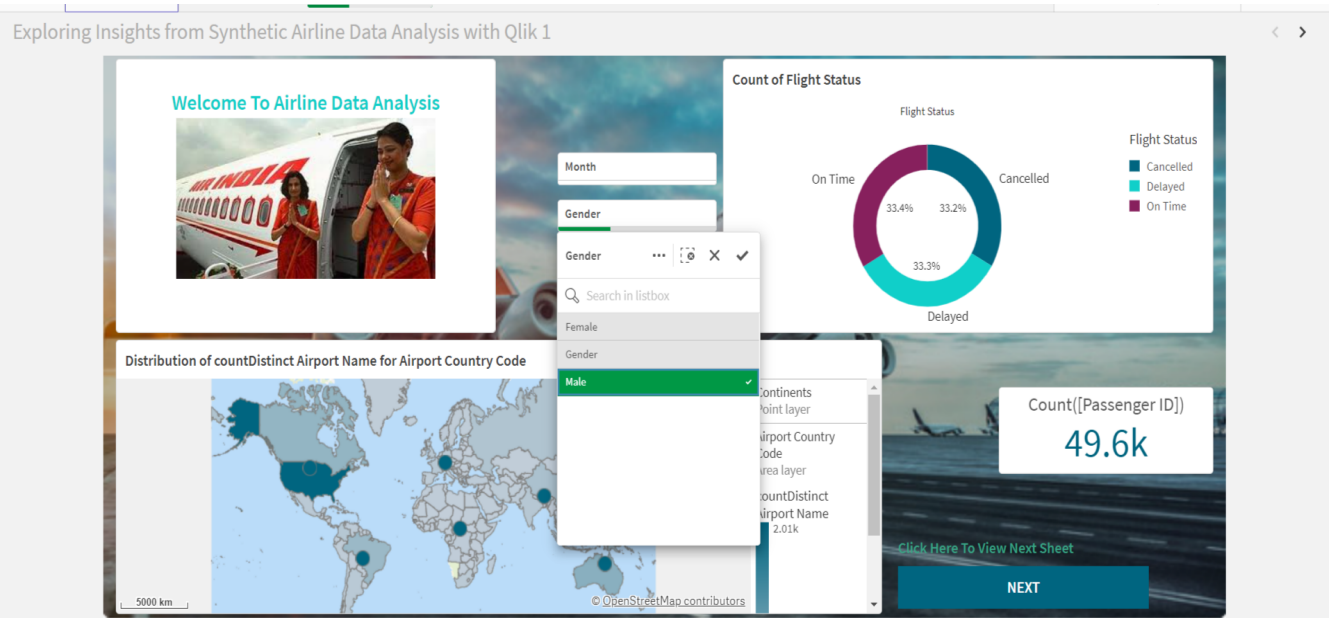
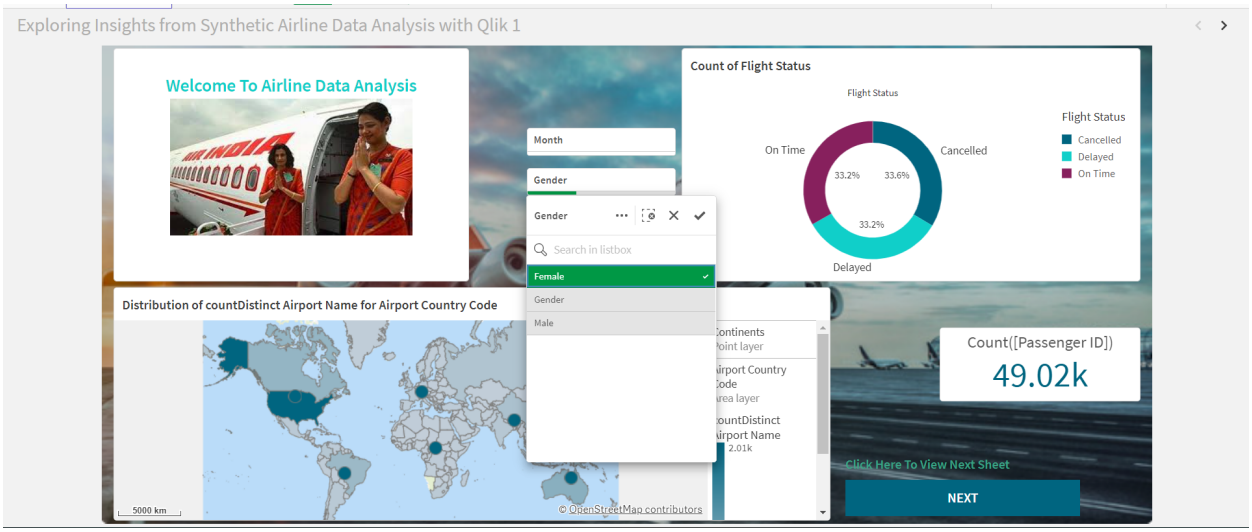


In the above image, we can see that the filter for Males is applied. Based on the gender, number of passenger count is shown through KPI.Changes also take place in Donut Chart.



In the above image, we can see that the filter for Females is applied. Based on the gender, number of passengers count is shown through KPI.Changes also take place in Donut Chart.