AIRLINES DATA ANALYTICS FOR AVAITION INDUSTRY

INTRODUCTION

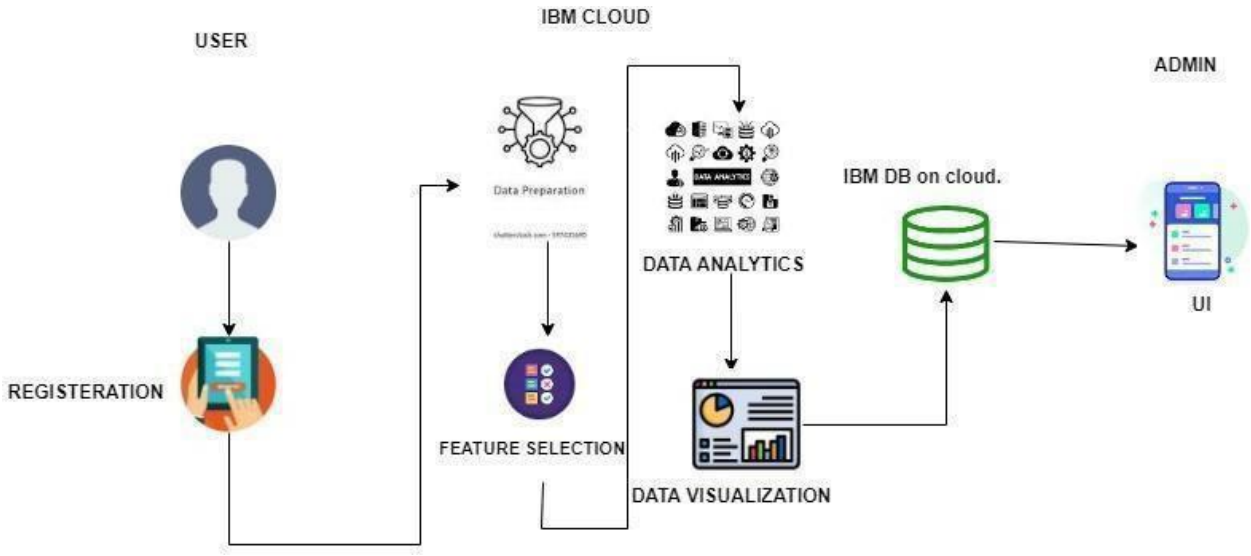
PROJECT DESCRIPTION:

The airport codes may refer to either the IATA airport code, a three-letter code that is used in passenger reservation, ticketing and baggage-handling systems, or the ICAO airport code which is a four-letter code used by ATC systems and for airports that do not have an IATA airport code.

PURPOSE:

To provide better Airline and AirPort services and to avoid delays in Air Travel across different locations at Municipality level. The aim is to provide airports, airlines, and the travelling public with a neutral, third-party view of which airlines are delivering on their promise to get passengers from Point A to Point B on-time.

SOLUTIONS



LITERATURE SURVEY :

Author: Emillio Collar

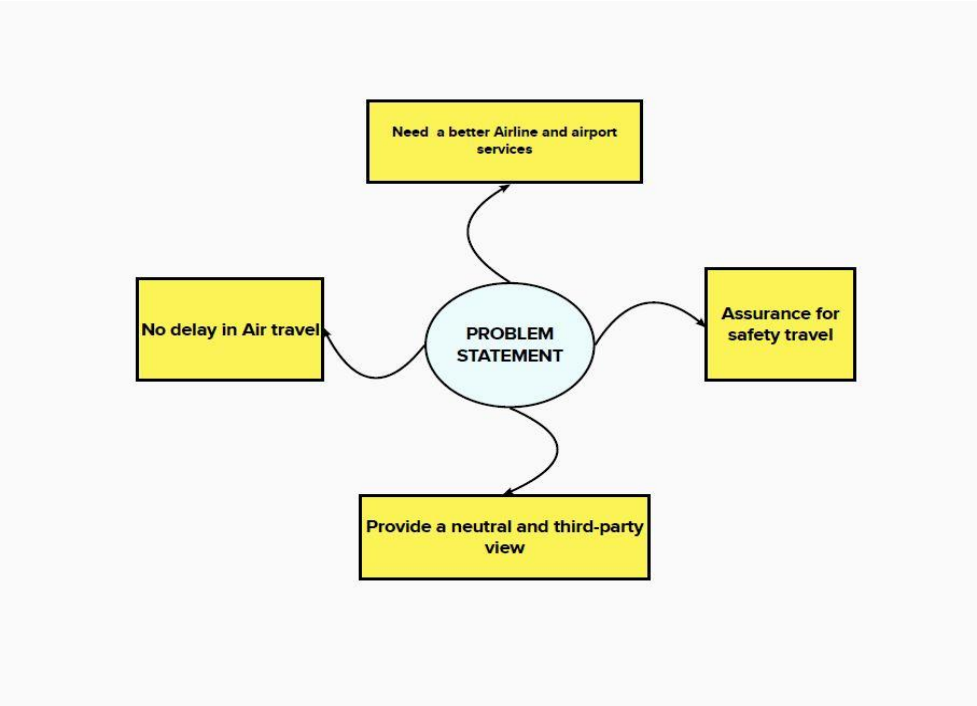
The researcher in this article cited that,Since 2008, a series of megamergers has dramatically changed the U.S. airline industry. Despite the presence of fewer airlines in the market,thecompetition remains intense, which forces airlines to continually search for ways to increase their efficiency to maintain survival and financial sustainability. To evaluate airline performance and disentangle the causes of inefficiency, this paper applied a two-stage network data envelopment analysis approach and a truncated regression to investigate the performance of nine U.S.-based airlines from 2015 to 2019. Our empirical results reveal that during the sample period, airlines' operating efficiency steadily improved, but the efficiency in the profitability stage stagnated. Therefore, strategic resource allocations are needed for airlines to see further advances in their overall efficiency. On average, airlines operating in the low-cost business model yielded higher efficiency scores than their peers operating in the full-service framework. While an airline's size, measured in terms of total assets, has a positive influence on operating efficiency, a larger number of full-time employee equivalents hinders efficiency outcomes, which indicates the importance of enhancing labor efficiency among carriers.

Author: Denise Dumiko De Medeiros

The researcher in this article cited that,this paper aims to analyze the opinion of tourists about airlines' service in a developing country. For this, the study proposes to make a comparative analysis of two evaluation models (SERVQUAL and SERVPERF) to investigate the factors that influence the formation of perceived quality in airline services, using statistical techniques such as Cluster Analysis and Structural Equation Modeling. Although the results were not the same, the result of both analyzes indicated two common dimensions (tangibles and empathy) that influence the customer's perception of the airline service quality. The main conclusion of this study is that the two analyzes are convergent for the study sample. The SERVQUAL and cluster analysis allow airline managers to identify and prioritize gaps in service delivery according to criticality, aiming at the allocation of efficient resources by the airline. The SERVPERF and SEM provide statistical evidence of the impact of different dimensions of service quality on customer satisfaction, highlighting the direct relationship between satisfaction and dimensions. Considering how customers evaluate the service provided by airlines, particularly regarding the service they receive from airport employees, this study has relevance for decisions taken

by airline managers to develop quality services, and provide guidelines for improvements in airline services.

Problem Statement:



EMPATHY MAP

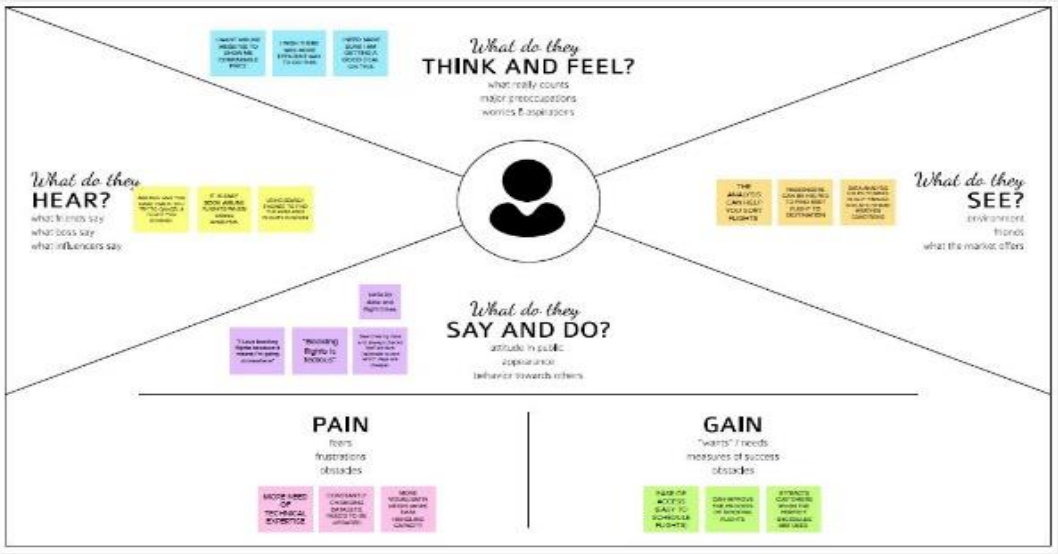
An empathy map is a simple, easy-to-digest visual that captures knowledge about a user's behaviour and attitude. It is a useful tool to help teams better understand their users. Creating an effective solution requires understanding the true problem and the person who is experiencing it. The exercise of creating the map helps participants consider things from the user's perspective along with his or her goals and challenges.

Empathy Map Canvas

Gain insight and understanding on solving customer problems.

1

Build empathy and keep your focus on the user by putting yourself in their shoes.



Share your feedback

BRAINSTORM AND IDEATION

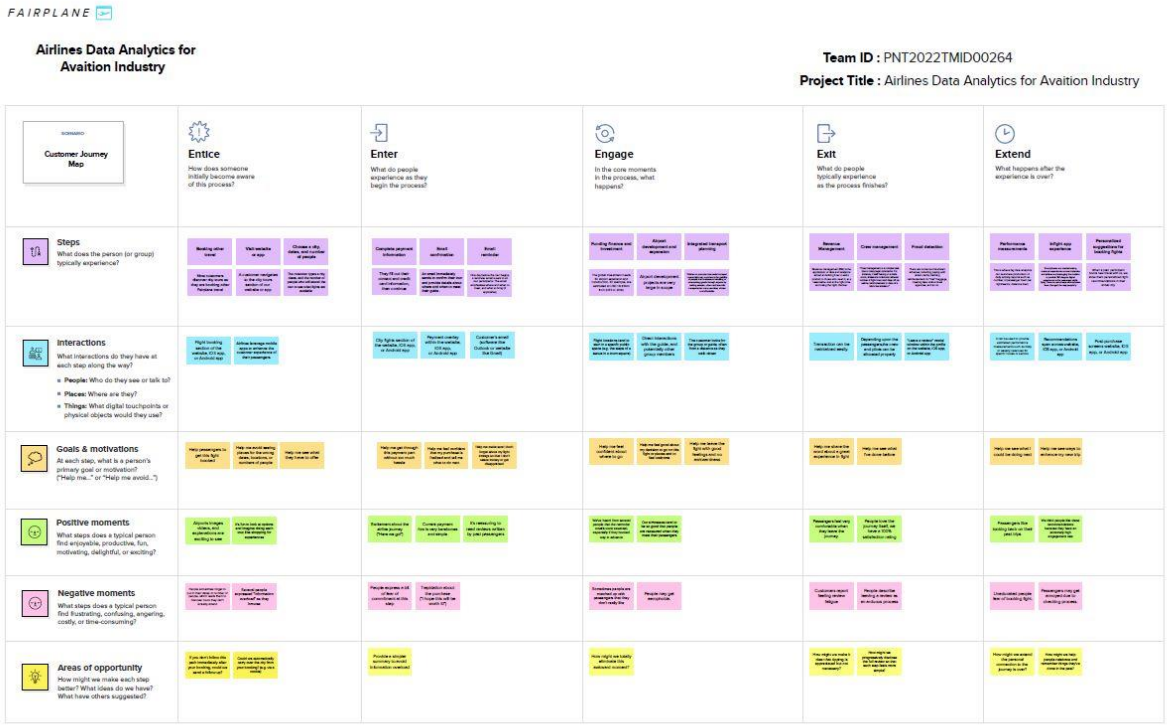
GOKUL		
Continent filter	Airpods and number of municipality	Waterfall chart
No. of Airpods by continent	category on flight counts	Data visualization
continent wise pie chart	Packed bubble cart	Summary cards

Jaison Devraj		
Understanding data set	Latitude degree	Airstats data on airport
Report for airport performance	Resource coverage data	Load the data set
perform join operation on data set table	IBM cloud	Multiple analytical graphic

Dileep Kumar		
Fight type filter	Column chart	Data Exploration
Understand the statistics	Data preparation	Calculated Field
Data set	IBM Cognos	Data stored in spreadsheet

Gopikrishnaa		
Fundamental concepts of IBM Cognos	Virtualization	Planning phase
Development	Provide airlines	Public travelling with metal
Assurance for safety	Third party view	Dashboard

CUSTOMER JOURNEY MAP



Sprint Delivery Schedule

A milestone schedule, or milestone chart, is a timeline that uses milestones to divide a project schedule into major phases. A milestone chart is a way to visualize the most important steps of our project. Each milestone the team achieves brings us closer to completing the project. As a result, milestones provide a sense of accomplishment and show the team how the work they're doing contributes to the overarching project objective.

Advantages

1. This application helps users predict the delays if they occur.
2. As a result, they can accurately predict these flight delays allowing passengers to be well prepared for the deterrent caused to their journey.

3. Enabling airlines to respond to the potential causes of flight delays in advance to diminish the negative impact.
4. Therefore, predicting flight delays can improve airline operations and passenger satisfaction, which will result in a positive impact on the economy.

Disadvantages

The people who are unaware of this application will have no idea about their flight delay unless they have been notified.

CONCLUSION

Flight delays are a major problem in civil aviation. They incur direct and indirect costs, such as maintenance at the gate, extra fees for crew, food service, and lodging. They also affect passenger satisfaction. Flight delay is inevitable and it plays an important role in both profits and losses of the airlines. An accurate estimation of flight delay is critical for airlines because the results can be applied to increase customer satisfaction and the incomes of airline agencies. So, the prediction and analysis of flight delays are of great significance to airlines, passengers, and airports. Predicting delays will help an airport to adjust resource allocations, quickly analyse the causes, and take measures to reduce or eliminate delays. Therefore, It delivers a well-friendly graphical UI and gives a proper delay rate to the users.

References

Iris Hausladen, Maximilian Schosser " Towards a maturity model for big data analytics in airline network planning", ELSEVIER-Journal of Air Transport Management, Volume 82,(2020). 2. Julio Pulido, NortekDana Moore, William Hill "Life Data Analysis with Applications for the Airline Industry ", IEEE XPLORE Published in 2016 Annual Reliability and Maintainability Symposium (RAMS) 3. Saba Firdous, Haseeba Fathiya, Lipsa Sadath " Exploratory Data Analysis on Aviation Dataset ", IEEE XPLORE, Conferences-2021 4. Yushan Jiang, Yushan Jiang "Applying Machine Learning to Aviation Big Data for Flight Delay Prediction" IEEE XPLORE, Conferences -2021.

PROJECT GITHUB LINK :

https://github.com/IBM-EPBL/IBM-Project-12837-1659495506

PROJECT DEMO LINK :

https://drive.google.com/file/d/1q_2PD5Wdr8KipydfOeU-jLqSDEyryVXy/view

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