**REPORT OF SALES ANALYSIS OF LUFTHANSA GROUP**

**Executive Summary**

The Lufthansa Group is an aviation group that operates worldwide and it seeks to optimize its airline routes, fine-tune the pricing strategies and streamline operations and personalize services. The data is an Excel file analyzed with Power BI. DAX expressions were used to calculate new measures. The group has six airlines in operations across six cities generating more than 6 billion dollars in Revenue. The majority of its revenue is through two airlines that provide business-class tickets. The number of stops should not exceed one, and late-night flights should be converted to night flights to manage resources and personnel.

**Introduction**

The Lufthansa Group is an aviation group with operations worldwide. The Lufthansa Group is composed of the segments Network Airlines, Eurowings, and Aviation Services. It has been in operation for more than half a century. They operate in an industry that is fiercely competitive and they seek operational efficiency, revenue maximization, and superior customer experience. In order to achieve these goals, it is pertinent to make data-driven decisions by analyzing the data, drawing insights, and making recommendations that will help the airline business experience continuous growth in the airline industry. The data is an Excel file that has been cleaned. The objectives of the analysis are:

* Optimize airline routes
* Fine-tune the pricing strategies
* Streamline operations and personalize services

**Methodology**

The data was cleaned on Excel and uploaded into the power query where it was transformed ensuring the columns that are not needed are removed and also ensure the columns are properly labeled and the values are on the right character. DAX expressions were used to calculate new measures.

**Dataset Overview**

The data set has 11 variables which are airline company, flight codes, source city, destination city, number of stops, arrival time, departure time, class of seat, duration for flight, days left before flight departure and the ticket price of the flight.

**Analysis and Findings**

1. There are six airlines flying six routes with over three hundred thousand flights within this period.
2. More than 6 billion dollars were generated with Vistara Airline generating more than 60% of the total revenue. Spice Jet generated the least revenue.
3. The average Flight price is about $21,000. Vistra Airlines charges the most for their Airline while Air Asia is the cheapest Airline.
4. The average price for a business class ticket is $53,000 and it is only operated by two airlines: Vistra and Air India. The average ticket price for economy class is $7,000 with the four other airlines operating it.
5. More than 66% of the flights carried passengers in the economy class which makes it the class of choice. However, the business class brought in 5 billion USD in revenue which constituted more than 80% of the total revenue by the airlines.
6. The average flight duration for the business class is more than that of the economy class. It could be adduced that the distance of the journey necessitated the need for more comfort.
7. The flight ticket is influenced by the flight departure time. The flight ticket is most expensive for flights that depart at night with an average ticket price of $23,000 while late night has the lowest price ($7,000). However, for business class, Morning, Evening and Night are priced equally while the morning flight is the most expensive for the economy class ticket.
8. Delhi to other cities brought in the highest amount of revenue in the economy class and also the most flown route generally while Mumbai to other cities brought in the most revenue for the business class. Generally, Chennai to other cities is the least flown (38,700 flights) but Hyderabad brought in the least revenue 822 million USD.
9. Most of the passengers preferred flights with only one-stop while two or more stops is the least preferred choice of flight. Also, most passengers travel in the morning hence morning has the highest number of flights departing.
10. The price for a flight ticket increases steadily as the departure day approaches. However, it dropped a day before the departure date but for either economy or business class, it increases as the flight departure draws closer. The ticket price for a day before flight departure is almost times three the price 50 days before flight departure.

**Recommendations**

1. The number of stops for all the flights should not be more than one as this is the preferred choice for most of the customers.
2. Business class should be made available for the other airline as the other two lines with business class generate more than 80% of the total revenue. This will also help increase the revenue for Lufthansa.
3. The disparity in the number of flights and revenue generated in routes from Delhi and Mumbai to other cities when compared with other cities is high and this should be reviewed so as to ensure that airlines flying those routes gets more patronages.
4. The price ticket for the business class should be increased as it could generate more revenue for the group as it currently generates more than 80% of the current revenue. While doing this, more features to make the business class worthwhile should be provided as it is obvious it will be paid for.
5. Morning, Early Morning, and Night are the three most preferred departure times by the customers hence more flights should be provided to avoid delays. Flights for Late Night departure can be added to Night departure time so as to save resources and manage personnel.

**Conclusion**

The Lufthansa Group operates in a competitive market with the potential to optimize its routes, review prices and also provide customer-centric services. With the actionable insights generated from the data and recommendations provided, Lufthansa Group will be able to compete and bring in more revenue while ensuring the customers and employees are satisfied.

**Limitations and Future Work**

1. The dataset did not include the ID of the customers as this would help identify the most loyal and profitable customers. Also, be able to give rebates to ensure continuous patronage.
2. The expenses incurred by the airline are not provided so as to be able to evaluate if the group is making a profit and identify areas where cost should be reduced or cut down.