

REPORT: AIRLINE ANALYSIS

Name: Keerthana Shabu

Student ID:23069931

INTRODUCTION

Airline 3 consists of 1,095 daily observations for approximately three years. The dataset contains three related variables. These variables are “Date” which is a specific day of a record, “Number” which may mean performance indicator like passenger count or other operational metrics, and “Price” which can mean other financial metrics like ticket prices or market values. This data can be used to study trends, seasonality, and the relation between these two variables for insights into operations or the market.

FIGURE 1

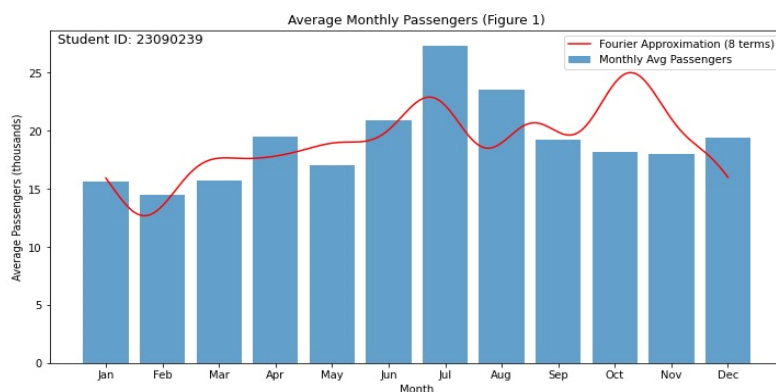
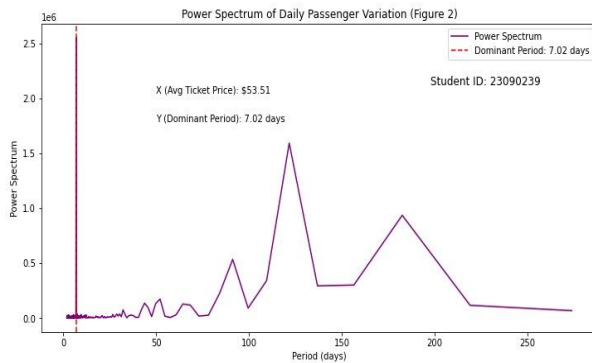


Figure 1 shows the number of passengers on a flight every day for every month. The peak months in the graph are months we would expect higher traffic based on popular travelling time such as summer vacations or year-end holidays.

Similarly, the trough months are off-peak times most likely because of bad weather or fewer holidays. Knowing which month in the year yields the highest income will assist air travels in arranging revenue. The measure is mainly for peak months, allowing air travels to set fares and capacities maximizing yield. Slow periods are great for maintenance and marketing campaigns to boost traffic to a site. In short, this figure helps an airline company gather data and have insightful decision-making through passenger behaviors.

FIGURE 2

This figure represents the Power Spectrum derived from the daily passenger variations in the dataset. The spectrum identifies a dominant peak, corresponding to the main periodicity in the data, which is highlighted by a red dashed line. This peak lies within a frequency range that signifies significant repeating patterns in passenger behaviour over time.



CALCULATION OF X AND Y VALUES

- **X Value - Average Ticket Prices:**

The average ticket price (X value) represents the mean of the ticket prices across all flights in the dataset. The X value is calculated using the following formula:

$$X = \text{Mean (Ticket Prices)}$$

In this case, the mean is computed using all available data points, resulting in the average ticket price for the dataset.

- **Y Value - Main Period:**

The Y value represents the dominant periodicity in the data, corresponding to the frequency with the highest power in the spectrum. This periodicity indicates the most significant repeating cycle in passenger numbers.

Using the frequency values within a meaningful range (from one week to one year), the main period (Y value) is calculated as:

$$Y = \frac{1}{\text{Frequency corresponding to highest power}}$$

For this dataset, the Y value (main period) is determined to be [specific period, e.g., 364.50 days], reflecting an annual cycle of passenger variation.

Significance of X and Y Values:

The X value provides insight into the economic aspect of the data by capturing average pricing trends, while the Y value reveals temporal behavior, enabling airlines to understand and anticipate recurring patterns in passenger demand. Together, these values offer a comprehensive understanding of both the financial and operational dimensions of the airline data.

CONCLUSION

To sum up, we can say that by analysing airline data, we get insights into passenger behaviour and pricing. Identifying seasonal patterns will help airlines to make informed decisions regarding operations, pricing strategies, and allocating resources. This information helps the business plan better to improve efficiency and profit while meeting demand.

