Airline Booking Demand Forecast: Modified Additive Model Analysis

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Introduction:
Accurate demand forecasting is pivotal for airlines trying to maximize their profits. In this study, we focus on evaluating a modified additive model for predicting airline booking demand. The model incorporates a custom-weighted averaging technique and aims to minimize the Mean Absolute Scaled Error (MASE) relative to the Naïve forecast.

Model Analysis:
After organizing and merging our data, we created a modified additive model that employs a custom-weighted averaging function to calculate the average remaining demand. This provides a nuanced approach to short-term demand fluctuations. By increasing the weighting for more recent days and decreasing the weighting for older days, this model is significantly better compared to the Naïve forecast. When we apply the custom weighted function, we group by days prior to departure date and the day of the week to ensure our model would be able to pick up patterns within the data, such as certain days with higher travel or a higher increase in bookings as the departure date gets closer.

Results:
After calculating and summing the errors for our modified additive model forecasts and the naive model forecasts to calculate the MASE, our modified additive model achieved a remarkable MASE of 0.088, indicating superior accuracy compared to a previous model we made with a MASE of 0.907. The custom-weighted averaging technique of our modified model provides a nuanced approach to short-term demand fluctuations, allowing the model to assign more appropriate weights to recent data points and provide more precise predictions for future booking demand.

Conclusion:
In conclusion, the modified additive model, with its custom-weighted averaging technique, showcases exceptional performance in predicting airline booking demand. The MASE of 0.088 highlights the model's accuracy, limiting the effect of short-term variation on predictions. This increase in accuracy can have a significant impact on the airline's ability to sell more tickets and create a more profitable business strategy in the long term.