ISYE 6501 Project: Maximizing the Disney Experience

Disney is world known for its amusement parks, entertainment attractions, and a never-ending list of activities to enjoy. To provide outstanding customer service and memorable service engagements, Disney relies on analytics to bring the "magic" to the world. Analytics are used everywhere in Disney, from reducing wait time in lines to ensuring sufficient hotel rooms for booking and products are available for purchasing.

1. To maximize customer experiences, it is crucial for Disney to know the demand and volume of customers in the parks on any given day, which is why operational planning is an important element. One of the Analytic models that Disney uses is forecasting.

Given {actual guest arrival data, ticket pre-sale data)

Use {Regression}

To {forecast the number of guests that will be visiting a park on a given day, so that they can schedule the number of employees to work, have the right amount of inventory for the restaurants and shops, having available hotel rooms, etc. }

2. Since Disney will experience seasonality with its visitor volume and other factors, the time series forecast may be affected. Therefore, a secondary analytical model should also be applied.

Given {actual guest arrival data, ticket pre-sale data}

Use {Triple exponential smoothing or Holt-Winters with a t and alpha value higher than 0.5 to take trends and cyclic into account}

To {allow Disney to better forecast by removing random variation and smoothing the data}

3. With such information on hand, Disney could use the forecast result to analyze the queuing by applying a queuing model.

Given {The forecast of the expected number of customers at the park, average service time per ride}

Use {Queueing model}

To {Estimate average wait time so that Disney can create a strategy for shorter queueing time}

4. Disney also sells FAST passes for visitors so that they can skip the line by virtually having a spot in the line, however, this complicates the queueing model as we cannot tell if the pass holder will eventually show up for the ride.

Given {FAST Pass user location, ride and show schedules, No. of FAST pass distribution, past data weather FAST Pass activities }

Use {Logistics regression model, stepwise variable selection}

To {Estimate the impact of the FAST Pass on the queueing time}

5. As for facilities, Disney can also utilize analytics to assist in operations.

Given {Past facility data}

Use {Weibull distribution with K greater than 1}

To {Estimate the time a rollercoaster can go before it will need a repair or maintenance}

In conclusion, in order for Disney to provide a magical place, it requires careful tailoring of its services and analytics can be applied everywhere to assist with its daily operations.