Recommendations for Big Mountain Resort

Introduction

About 350,000 people ski or snowboard at Big Mountain Resort, a ski resort located in Montana. Big Mountain Resort has recently installed an additional chair lift to help increase the distribution of visitors across the mountain. This additional chair increases their operating costs by $1,540,000 this season. The resort's pricing strategy has been to charge a premium above the average price of resorts in its market segment. Basing their pricing on just the market average does not provide the business with a good sense of how important some facilities are compared to others. The purpose of this report is to provide Big Mountain Resort with guidance on how to select a better value for their ticket price and evaluate a number of changes that Big Mountain is hoping will either cut costs without undermining the ticket price or will support an even higher ticket price.

Pricing Model

To determine a fair price for the Big Mountain Resort, I cleaned and modified the original data from the database manager that contained 27 columns from 330 US resorts. I added some state specific data to take into account the different populations, sizes, and resort competition in the various US states. I also constructed some new data that represented ratios of the existing data from the original data set. After adding the new features and removing rows with missing price values, the final data set used for modeling had 277 records of US resorts and 36 data features. In the model, I used the weekend price as the target feature. The data also had weekday prices included but more US resorts were missing the weekday price data so that feature was removed. In Montana, the weekend and weekday prices were equal.

I built a linear and random forest model to predict the ticket price. I used cross validation to compare the best linear model to the best random forest model and determined that the random forest model was more accurate and had less variability. I tested both models using a portion of the data set that was not used to build the model. The best random forest model, on average, was expected to predict the ticket price within $9.54 of the actual price compared to the best linear model which was expected to predict the price within $11.79, therefore I chose the random forest model as the more accurate model to use for predicting ticket prices.

When I used all the data from the US resorts, excluding Big Mountain, the random forest model on average, was expected to predict the ticket price within $10.39 of the actual price. The modeled price for Big Mountain was $95.87, while the actual price is $81.00. This suggests that there is room for an increase since the model is expected to predict the ticket price within $10.39 of the actual price. At a very minimum, I recommend increasing prices to $85.48. To cover the operating costs of the additional lift, Big Mountain would need to increase prices by $0.88, so the additional $3.60 price increase will be charging visitors for the facilities Big Mountain offers.

It is important to note that the validity of the model lies in the assumption that other resorts accurately set their prices according to what the market (the ticket-buying public) supports. The fact that Big Mountain resort seems to be charging that much less that what's predicted suggests Big Mountain resort might be undercharging. It's reasonable to expect that some resorts will be overpriced and some underpriced. If resorts are pretty good at pricing strategies, it could be that the model is simply lacking some key data. Some data that could help validate the model would be operating costs, number of expected visitors, and number of expected tickets sold.

Potential Changes

Big Mountain is considering the following potential changes to either cut costs or increase revenue:

1. Permanently closing down up to 10 of the least used runs. This doesn't impact any other resort statistics.
2. Increase the vertical drop by adding a run to a point 150 feet lower down but requiring the installation of an additional chair lift to bring skiers back up, without additional snow making coverage
3. Same as number 2, but adding 2 acres of snow making cover
4. Increase the longest run by 0.2 mile to boast 3.5 miles length, requiring an additional snow making coverage of 4 acres

Scenario 1

I recommend closing down 1 of the least used runs because it did not have an effect on the ticket price. Without knowing the operating costs of the least used runs, I am not able to comment if Big Mountain should close down more than 1 of the runs. However, Big Mountain should not consider closing down 3-4 or 6-7 of its runs because the price would not change compared to closing down 5 or 8 of the runs, respectively.

Scenario 2

I recommend this scenario because it increases support for a ticket price by $1.99 and over the season, this could increase revenue by $3,474,638. However Big Mountain needs to confirm that the estimated operating cost of the additional chair lift will be less than $1.99 per expected ticket to increase their profits.

Scenario 3

I do not recommend this scenario because adding the 2 acres of snow making cover did not provide support to increase the ticket price more than scenario 2.

Scenario 4

I do not recommend this scenario because it did not provide support to increase the ticket price.

Conclusion

Even though the model predicted Big Mountain’s ticket price as $95.87, I recommend Big Mountain Resort increases their ticket price from $81.00 to $85.48 for next season to be conservative and not surprise their regular visitors by increasing too much in one season. $0.88 of the increase will go towards the operating costs of the additional lift and $3.60 will go towards charging a more fair price for the facilities they offer. I recommend Big Mountain considers closing down the least popular run. This will not change the recommended price.