Business Strategy Report

A report on the business' revenue projections based on the proposed modeling scenarios

The Overview

Big Mountain Resort is seeking to increase revenue by the end of the fiscal year by charging a premium above the average ticket price for resort facilities and reducing annual operating costs without undermining the ticket price.

Visual Guide - Title and Explanation

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Introduction

Big Mountain Resort is a Montana ski resort that offers spectacular views of Glacier National Park and Flathead National Forest with access to 105 trails. Every year about 350,000 people come to ski or snowboard at Big Mountain. The resort offers facilities such as 11 lifts, 2 T-bars, and 1 magic carpet to accommodate skiers and riders of all levels and abilities. Recently, they installed an additional chair lift to help increase the distribution of visitors across the resort. The new chair lift comes with additional operating costs of about $1.54 million this season. For this reason, they have decided to take a look at their pricing strategy to determine if charging a premium above the average ticket price for resort facilities is the best approach to increase revenue. To achieve this, the business has to determine if and by how much they would increase ticket prices or if they would be forced to close down some of their resort facilities.

Methodology

To determine how much they would adjust their ticket prices, the business proposed four scenarios they hoped would increase revenue or reduce operating costs without undermining the ticket price. The scenarios were tested using a pricing model to predict ticket prices. The pricing model was trained on data that included features that were identified as important predictors of the ticket price. These features were identified through linear regression by using the Random Forest Model.

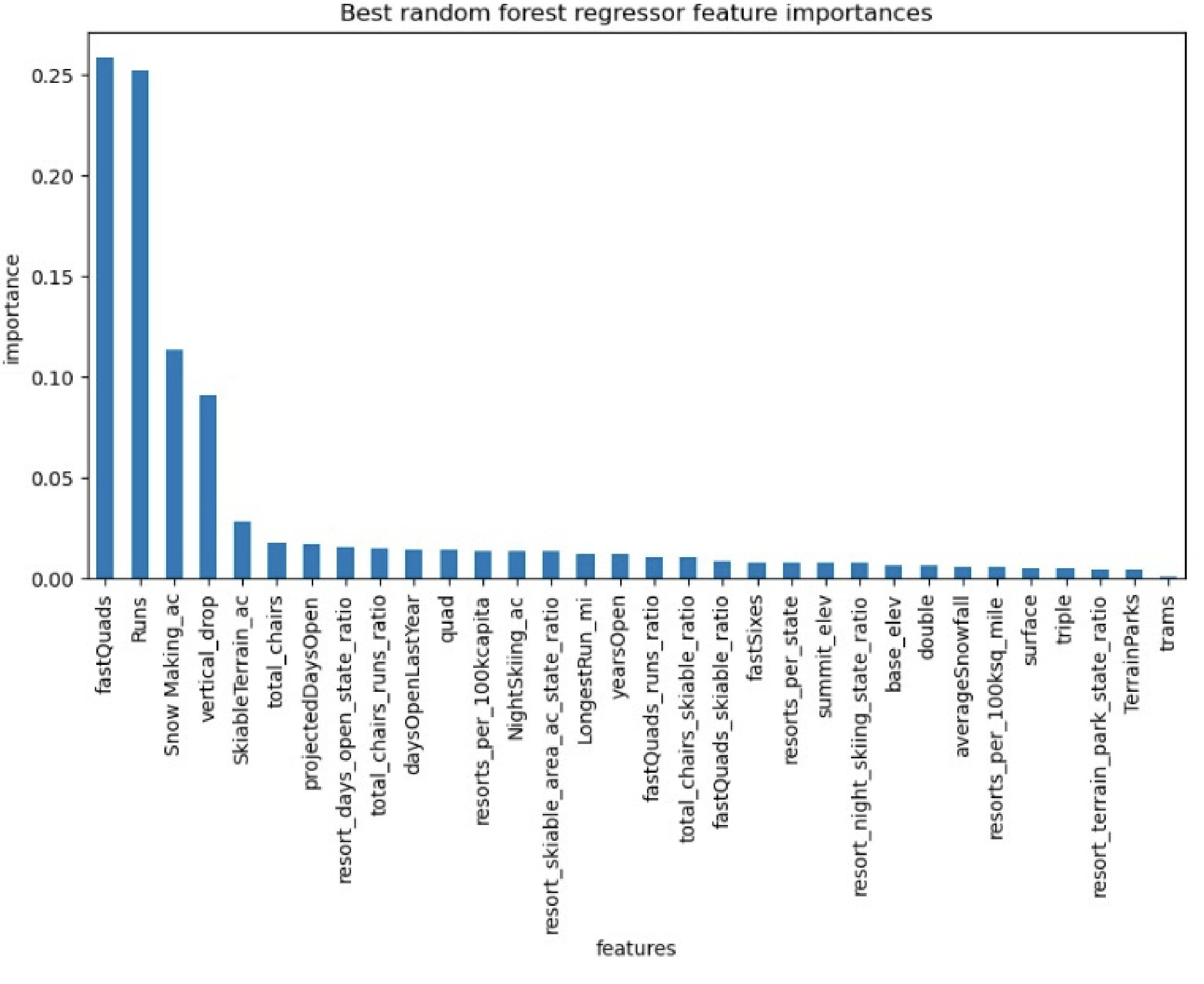

Figure 1: Using Linear Regression, the Random Forest Model identifies resort features and their importance in predicting ticket prices.

The four scenarios were:

- Permanently close down up to 10 of the least used runs. This doesn't impact any other resort statistics.
- Increase the vertical drop by adding a run to a point 150 ft lower down but requiring the installation of an additional chair to lift and bring skiers back up, without additional snow making coverage. Making the total vertical drop 2503 ft.
- Same as the second scenario but adds additional snow making coverage.
- Increasing the longest run by 0.2 miles, making the total longest run 3.5 miles, requiring an additional snow making coverage of 4 acres.

Results

The model says closing one run makes no difference. Closing 2 and 3 successive runs reduces support for ticket price and revenue. The model shows a couple of plateaus where closures of a certain number of runs have the same effect. For example, if Big Mountain closes down 3 runs, they may as well close down 4 or 5 as there's no further loss in the ticket price. This would lead to a loss of $0.66 per ticket. However, increasing the closures up to 6, 7, 8, or more leads to a large drop in revenue about $1.26 per ticket.

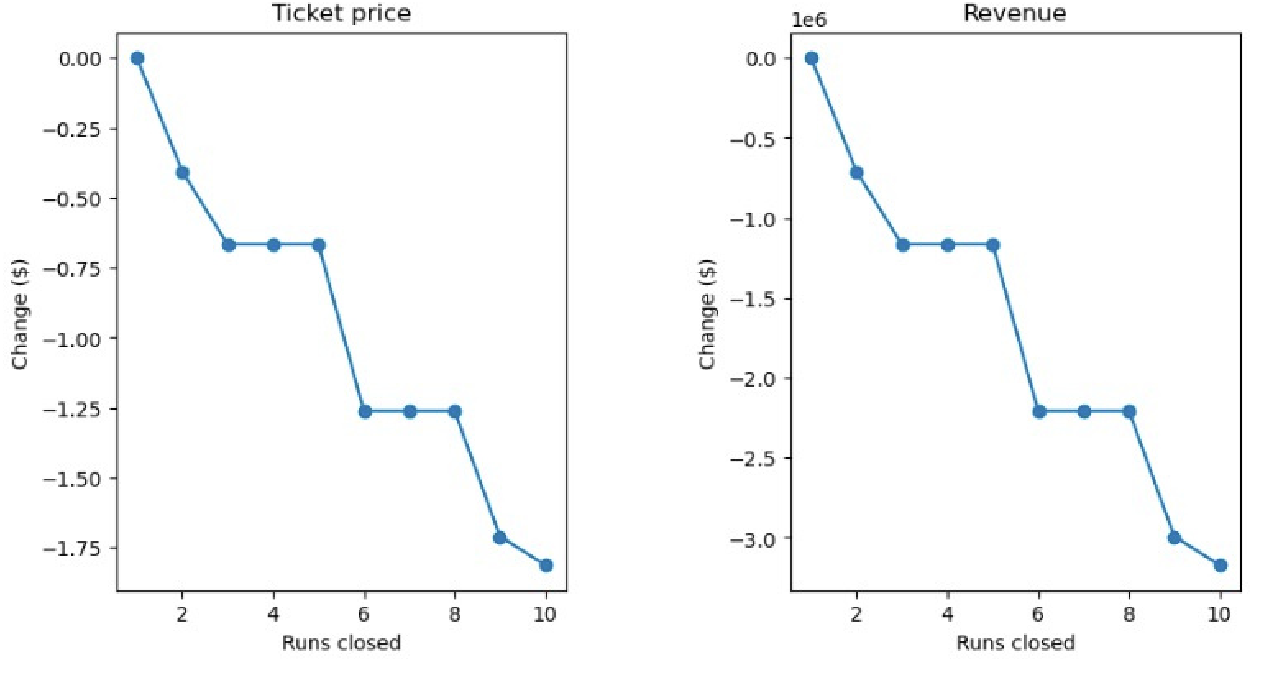

Figure 2: Analyzing closing runs and impact on revenue and ticket price

Scenario 2 increases support for ticket price by $1.99. Over the season, this could total an expected amount of $3,474,638. The question to be asked here is does added revenue offset the cost of extending a run by 150 ft and including a new lift chair? Additionally, are there geographic limitations to extending the run that would affect the viability of this scenario?

Scenario 3 also supports ticket price by $1.99 and would generate revenue of about $3,474,638. Such a small increase in the snow making area makes no difference.

Scenario 4 indicates there is no difference in ticket prices whatsoever. Although the longest run feature was used in the linear model, the random forest model (the one we chose because of its better performance) has the longest runway down in the feature importance list.

Decision Recommendation

I would recommend a combination of scenarios 1 and 2. Scenario 1 shows us that we can close one run and not affect the predicted ticket price/revenue. But closing one run may also have an operational cost-saving measure that can be applied to the bottom line. Modifying a run when considering scenario 2 to add to the vertical drop of 150 ft supports an increase in ticket prices/revenue. This scenario will require additional investigation into the cost of adding more vertical drop, and possible redirection of a run due to any geographic limitations in order to test the viability of adding to the vertical drop.

Further testing the additional run closures against other features in the training and test data with the predicted number of visitors might show us more information on which additional features might support ticket price/revenue increases.

Next Steps

Apart from the operating cost of the additional chair lift ($1.54 million) as mentioned, a useful piece of data would be the operating costs for the other facilities the resort has to offer such as fast quads, snow-making equipment, etc. The operating costs would illuminate which facilities were doing well or not.

While the predicted ticket price is based on what the market supports in the ski market space, asking the stakeholders what they based their original ticket prices on might help unearth reasons why the business executives chose the current ticket price.

If the pricing model is useful to the business, they could apply the increase in ticket prices as recommended by the data. Any new parameters that are related to the present business problem may be tested but if there are parameters that are not directly related to the presented business, they can be reviewed to ascertain if adding them or making a new pricing model to investigate further makes sense.

It would be ideal to make recommendations based on parameters that the business leaders may have used in the past, to guide future business decisions.