In analyzing the data provided for Big Mountain Resort, several steps were taken to evaluate the ticket price and make recommendations. The original dataset contained multiple columns, and two columns, 'fastEight' and 'AdultWeekday', were dropped due to their non-informative and repetitive nature. The target feature for predicting ticket price was identified as 'AdultWeekday', also known as 'Price'. Four additional features were engineered: TerrainParks, SkiableTerrain\_ac, daysOpenLastYear, and NightSkiing\_ac. Two sets of tables were created and saved back to the data folder.

To establish a baseline performance, the average price was taken and evaluated. Subsequently, a linear model was built using the identified features. Cross-validation was performed to estimate the model's performance, and its consistency with the test split was examined. Additionally, a random forest regressor model was implemented, and preprocessing steps were optimized. Cross-validation was again used to estimate the model's performance, and its consistency with the test set was evaluated.

Based on the evaluation, the random forest regressor model showed better performance. The model was selected as the preferred option to guide important business decisions. The mean absolute error (MAE) was recorded as 9.54, with an overall mean error of 63.81.

In terms of the current ticket price, Big Mountain Resort currently charges $83 for a one-day adult ticket. The modeling suggests that the resort could potentially support a higher ticket price, with an increase of $1.99. Additionally, the model recommends adding a run 150 ft lower down along with a chair lift to support it. However, it's important to consider the additional capital expenditure and ongoing operational costs associated with these enhancements. The introduction of a new chair lift is estimated to increase operating costs by $1.54 million.

To gain a deeper understanding of the business implications, it would be useful to have additional cost information, such as capital expenditure and ongoing operational costs. The modeled price may be significantly higher than the current price due to factors such as the resort's amenities and competitive positioning. To determine the business executives' perspective on this model, engaging in discussions and seeking their feedback would be essential.

If the business leaders find the model useful, it can be utilized to explore and test new combinations of parameters in various scenarios. However, it would not be efficient for the business leaders to rely solely on the data scientist for every testing process. To make the model accessible to business analysts and encourage exploration, it could be packaged as an API or embedded in an interactive dashboard accessible via the intranet. This would enable easy access, facilitate collaboration among stakeholders, and empower business analysts to utilize the model independently.

In conclusion, the model suggests the potential for a higher ticket price for Big Mountain Resort. Further enhancements to the facility should be considered to support the increased price. Incorporating additional operating cost and visitor volume data, as well as conducting market surveys, would provide a more comprehensive analysis and understanding of the market dynamics. Engaging a cross-functional team of business experts to evaluate the model and test assumptions is recommended. Packaging the model as an accessible tool through an API or interactive dashboard would enhance its usability and encourage collaboration among stakeholders.