Optimization Recommendations for Big Mountain Resort

To address the $1,540,000 increase in operational costs due to the addition of a new chairlift, this report proposes data-driven pricing strategy adjustments aimed at increasing revenue and achieving financial balance.

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1. Problem Context

Big Mountain Resort added a new chairlift this season, resulting in a $1,540,000 increase in operational costs. However, the current pricing strategy does not adequately reflect the added value of the facility. To cover costs and increase revenue in the next fiscal year, it is essential to optimize pricing strategies based on data analysis.

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2. Success Criteria

- Increase revenue by at least $1,540,000 in the next fiscal year through ticket price adjustments.
- Ensure that the pricing strategy remains reasonable without reducing customer demand.

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3. Solution Scope

- Identify key factors (e.g., number of facilities, visitor traffic) through data analysis and compare with similar resorts to develop effective pricing strategies.
- Use operational data from 330 ski resorts as a reference to design a new pricing framework.

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4. Key Findings and Analysis

Data-Driven Insights:

- **Excluded Features**: Principal Component Analysis (PCA) identified features related to the state of the ski resort (e.g., ski resort density per capita and snow area) as irrelevant and excluded them.
- **Revenue Prediction Models**: Linear regression and random forest models validated the feasibility of price increases. An R^2 value of approximately 0.85 indicates a strong explanatory power for changes in revenue.

- **Feature Importance**: The number of ski runs, artificial snow area, and vertical drop emerged as the most influential factors.

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5. Recommendations

1. **Adjust Ticket Pricing**:
   - Increase ticket prices by 10%-15% during peak seasons while offering family or group discounts to attract more visitors.
2. **Reduce Costs**:
   - Close some of the least-used ski runs to reduce operational expenses. Model predictions suggest closing three ski runs will have minimal impact on expected revenue.
3. **Expand Ski Runs**:
   - The model predicts that adding ski runs could support higher ticket prices, increasing profitability.
4. **Risk Mitigation**:
   - Regularly monitor the impact of price adjustments on visitor traffic to avoid losing customers due to overpricing.

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6. Conclusion

By implementing these recommendations, Big Mountain Resort can increase revenue while maintaining customer satisfaction, effectively offsetting the increased operational costs caused by the new chairlift.