

Case Study



Optimizing Hotel Room
Pricing for Revenue
Maximization

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Executive summary of the analysis and recommendations

- **Customer Segmentation:**
 - Conducted clustering Analysis , resulting in 9 distinct profiles.
- **Pricing Drivers Analysis:**
 - Analyzed data to identify key drivers with respect to Average Daily Rate
- **Demand Forecasting:**
 - Applied the forecasting model based for accurate demand forecasting based on past data.
- **Dynamic Pricing Strategy:**
 - Developed a dynamic pricing model tailored to each customer segment profile.
- **Recommendations:**
 - Refine dynamic pricing based on segment-specific insights and forecasts to optimize revenue.
 - Leverage forecasting data for proactive pricing adjustments.
 - Continuously monitor and adjust strategies for maximum effectiveness.

Overall analytical approach/ architecture

K- Means Clustering

Applied KMeans clustering to create 9 customer profiles

RandomForestRegressor

Used RandomForestRegressor to identify key pricing drivers

Meta -Prophet

Utilized Prophet model for demand forecasting

Dynamic Pricing

Developed and implemented pricing strategies based on customer segments and forecasts.

Customer Segment Analysis and Profiling



Key Insights:

Cluster 0: Short lead times, low cancellation rates, moderate ADR.

Cluster 1: Very long lead times, high cancellation rates, moderate ADR.

Cluster 2: Extremely long lead times, high cancellation rates, moderate ADR.

Cluster 3: Long lead times, high ADR, higher special requests.

Cluster 4: Moderate lead times, moderate ADR.

Cluster 5: Short lead times, high ADR, high special requests.

Cluster 6: Very short lead times, moderate ADR.

Cluster 7: Very long lead times, high cancellation rates, very low ADR.

Cluster 8: Short lead times, high ADR, very low special requests.

Customer Segment Profiling

Cluster		Name	Type	Business Suggestion
0	0	Budget Solo Travelers	Solo	Offer last-minute deals and discounts on single rooms.
1	1	Early Planners Couples	Couple	Provide early booking discounts and romantic packages for couples.
2	2	Long-Stay Corporate Guests	Solo	Promote long-stay offers and corporate rates, with flexible cancellation policies.
3	3	Premium Family Vacationers	Family	Offer family packages with child-friendly amenities and activities.
4	4	Standard Couples	Couple	Provide standard packages with optional add-ons for special occasions.
5	5	High-Spending Families	Family	Create luxury family packages with exclusive amenities and services.
6	6	Short-Notice Couples	Couple	Promote weekend getaways and special event packages.
7	7	Late Booking Business Travelers	Solo	Offer flexible booking options and business traveler amenities.
8	8	Luxury Solo Travelers	Solo	Market exclusive experiences and VIP services.

Figure 1: Customer Segmentation Profiling

Pricing drivers identification and analysis

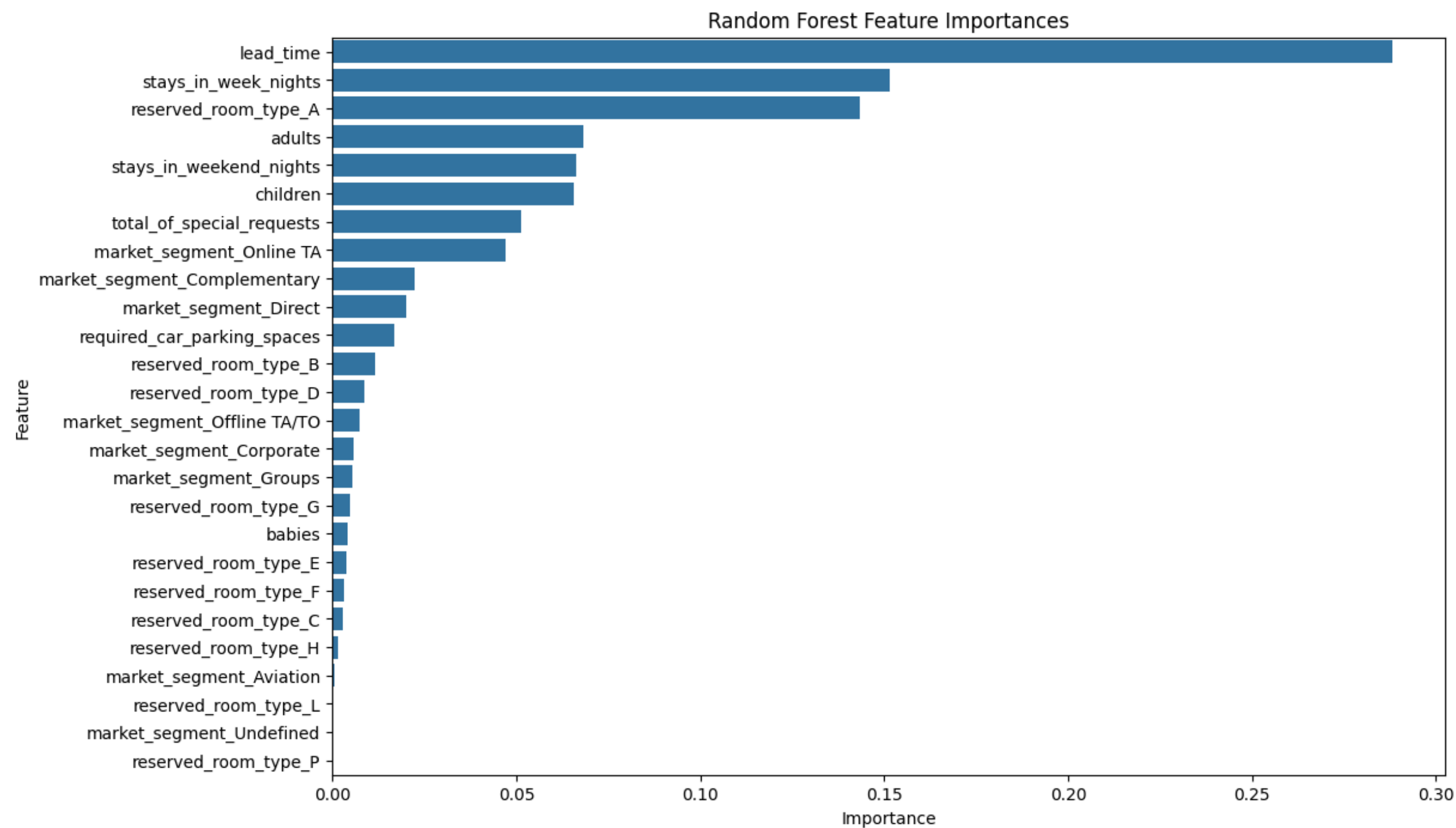


Figure 2: Random Forest Feature Importances

Recommended pricing strategy and expected impact

Pricing Strategy : (Note: Base price and multiplication factor can be adjusted accordingly)

- Budget Solo Travelers: Base Price * 0.8
- Early Planners Couples: Base Price * 0.9
- Long-Stay Corporate Guests: Base Price * 0.85
- Premium Family Vacationers: Base Price * 1.2
- Standard Couples: Base Price * 1.0
- High-Spending Families: Base Price * 1.3
- Short-Notice Couples: Base Price * 1.1
- Late Booking Business Travelers: Base Price * 1.05
- Luxury Solo Travelers: Base Price * 1.4

Recommended pricing strategy and expected impact

	Segment	Price	Revenue	Cost	Profit
0	Budget Solo Travelers	80.0	40000.0	25000	15000.0
1	Early Planners Couples	90.0	27000.0	15000	12000.0
2	Long-Stay Corporate Guests	85.0	17000.0	10000	7000.0
3	Premium Family Vacationers	120.0	18000.0	7500	10500.0
4	Standard Couples	100.0	40000.0	20000	20000.0
5	High-Spending Families	130.0	13000.0	5000	8000.0
6	Short-Notice Couples	110.0	27500.0	12500	15000.0
7	Late Booking Business Travelers	105.0	18900.0	9000	9900.0
8	Luxury Solo Travelers	140.0	16800.0	6000	10800.0

Figure 3: Assumed Impact Table

Recommended pricing strategy and expected impact

Impact :

- Revenue: Higher prices for premium segments increase revenue, while lower prices for budget segments reduce revenue.
- Cost: Costs remain constant but vary in relation to revenue across segments.
- Profit: Premium segments yield higher profits due to increased pricing, while budget segments have lower profits.
- Overall: Tailoring prices by segment optimizes revenue and profit, with ongoing adjustments ensuring effectiveness.

Conclusion

Tailored pricing strategies have effectively optimized revenue and profit by aligning prices with customer segment profiles. Premium segments yield higher financial returns, while budget segments drive volume.

Next Steps:

1. **Monitor:** Track strategy performance and adjust based on results.
2. **Refine:** Continuously update pricing based on data and feedback.
3. **Adapt:** Stay aware of market trends and competitor actions.
4. **Implement:** Use customer and sales feedback to improve pricing models.