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SMM641 REVENUE MANAGEMENT AND PRICING

Individual Problem Set 2

Q1

a) £8 --- 45845.71354

b) £9

The two-price strategy is preferable as it generates higher revenue and reduces emissions compared to the single-price strategy. This suggests that differentiated pricing during peak and non-peak hours more effectively captures drivers' willingness to pay, leading to increased revenue while promoting environmental benefits.

c) £13

The new strategy generates around £193,113 less revenue than the strategy in part b. However, it still satisfies the £1.1M revenue requirement. It requires a higher peak period price to meet the revenue constraint while minimizing emissions. This strategy reduces total emissions by 11,877.02, representing a 32% reduction in emissions compared to part b.

Q2

A company offers three study abroad programs for high school Spanish students: Summer, Semester, and Year Abroad. Each program has different durations, price points, and resource requirements, such as host families and school placements. The company seeks to maximize its revenue while ensuring sufficient resources and capacity to accommodate student demand. Students can choose between the programs based on price, program length, and available spots.

The company needs to make strategic decisions to optimize pricing and resource allocation across all three programs. The challenges are centered on handling varying demand across seasons, managing limited resources, and accommodating flexible student choices.

Question 1: How can the company optimize prices for the Summer, Semester, and Year Abroad programs to maximize revenue while considering seasonal demand fluctuations and student preferences?

Methodology:

- **Customer Choice Model (Multinomial Logit Model)**:

  This model predicts the probability of students selecting each program (Summer, Semester, Year Abroad) based on various factors, such as price, program length, and flexibility. By estimating how students value these attributes, the model helps forecast the demand for each program at different price points. This allows the company to anticipate how changes in price will influence the choices students make.

- **Dynamic Pricing**:

  Based on the demand predictions from the multinomial logit model, the company can implement dynamic pricing strategies. For instance, offering early-bird discounts for the summer program to capture early interest, and adjusting the prices for the Semester and Year Abroad programs as real-time demand fluctuates. If demand for a program is high, prices can be increased; if demand is low, prices can be lowered to stimulate enrollment. This helps maximize revenue by optimizing prices throughout the registration period while considering student preferences and seasonal demand patterns.

Question 2: How can the company efficiently manage overbooking risks for the summer program while ensuring that host families and school placements are adequately utilized?

Methodology:

- **Overbooking Strategy:**

  The company can overbook the summer program by accepting slightly more students than available spots, anticipating that some will cancel or not show up. Based on historical data, the company can estimate a no-show rate and adjust the overbooking accordingly. If no students cancel, the company may need contingency plans, such as finding extra host families or rescheduling students, but the goal is to optimize resource utilization without exceeding capacity.

By implementing these strategies, the company can optimize its pricing and resource allocation, ensuring a better alignment between student preferences and program capacities. This approach not only maximizes revenue but also enhances operational efficiency by managing overbooking risks and seasonal demand fluctuations effectively. Consequently, the company can improve its profitability and provide a superior service experience to students and their families.