Strategic Perk Assignment: Data-Driven Optimization for Traveler Engagement

Dynamic Assignment Based on Conversion Scores

A conversion score was calculated based on overall booking proportion and sessions before purchase. This score determines if a user is a fast or slow converter.

- Fast converters (33% of users) are assigned reminder perks like small discounts or loyalty bonuses.
- Slow converters (67% of users) receive stronger perks like large discounts or VIP services.

Cluster-Specific Perk Thresholds

Each cluster's probability was compared to a cluster-specific threshold (computed as the median for each cluster) to ensure the perk assignment is aligned with the user's likelihood of staying within that cluster.

Luxury Traveler Focus

Luxury travelers were identified manually by their high spending habits and specific IDs, ensuring they receive premium perks such as the Ultimate Prestige Package.

Perk Assignment Logic

Using both conversion score and cluster probability, perks were dynamically assigned to users. Bargain-sensitive travelers received discounts, business travelers received VIP benefits, and first-time travelers were offered enticing starter perks.

Final Perk Distribution

After applying this new logic, perks were distributed among users as follows:

- 2918 users received the General 5% Travel Discount.
- 1038 users received Exclusive Flash Sale Access.
- 472 users received Free Flight with Hotel Stay.
- 451 users received Extra 10% Off Next Domestic Booking.
- 376 users received Luxury Hotel Upgrade.
- 355 users received VIP Lounge & Fast Track.
- 346 users received 20% Off First International Booking.

- 34 users received Extra 9% Off Next Domestic Booking.
- 8 users received the Ultimate Prestige Package.
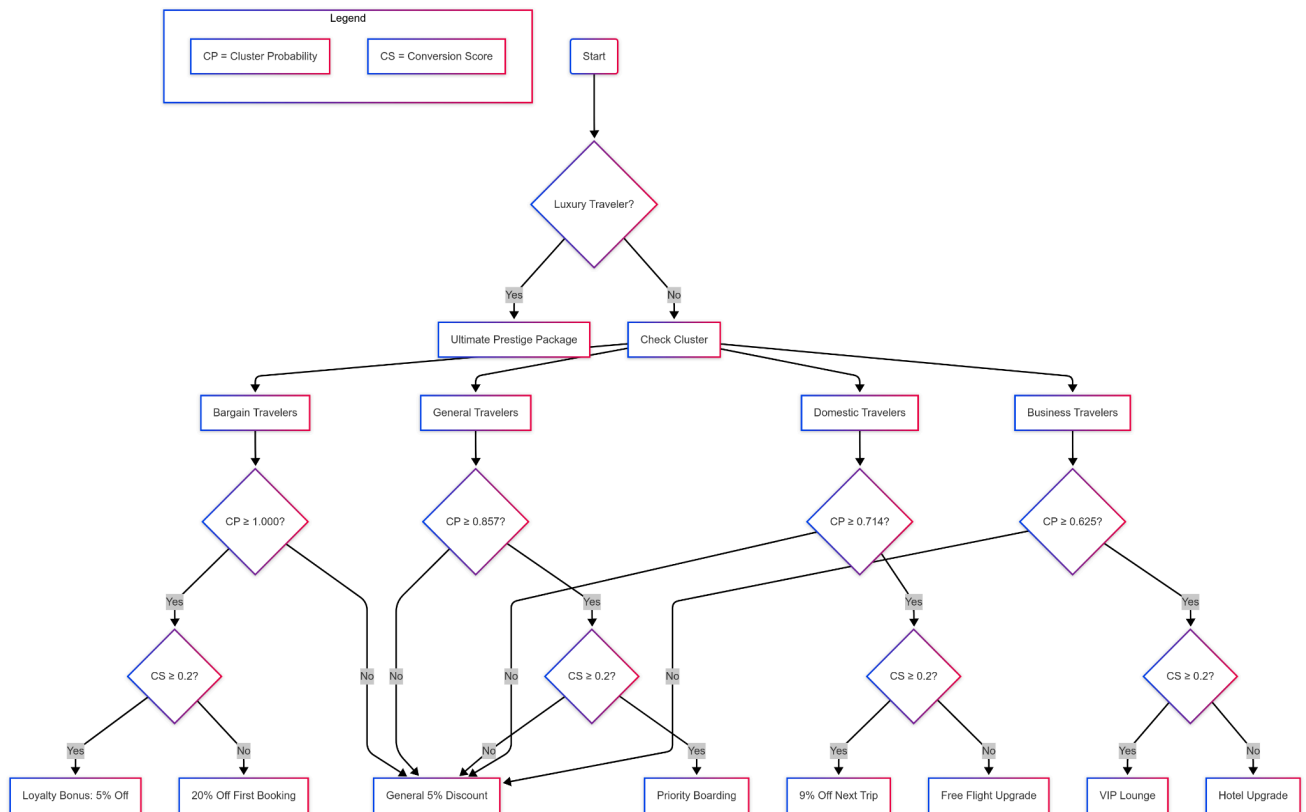
Perk Breakdown by Traveler Group

1. Bargain and Price-Sensitive Travelers

- **Exclusive Flash Sale Access (17.3%)** → Time-limited travel discounts for flights & hotels.
- **20% Off First International Booking (5.8%)** → First-time international booking discount.
- **General 5% Travel Discount** → Default offer for budget-conscious travelers.

Why It Works:

- Flash sales drive urgency and increase repeat purchases for deal hunters.
- First-time international booking discounts target new travelers with high incentives.

2. General Travelers

- **Exclusive Flash Sale Access (17.3%)** → Flash sale promotions to drive quick conversions.
- **General 5% Travel Discount (48.7%)** → Fallback discount for uncertain users across all groups.

Why It Works:

- Flash sales push frequent travelers to book sooner and fallback discounts ensure no travelers are left out.

3. Domestic and Casual Travelers

- **Extra 10% Off Next Domestic Booking (7.5%)** → Incentive for short-haul flights and local getaways.
- **General 5% Travel Discount (48.7%)** → Default baseline discount for users not qualifying for other perks.

Why It Works:

- Keeps low-frequency travelers engaged by offering them incentives to convert on future bookings.

4. Business Travelers

- **VIP Lounge & Fast Track (5.9%)** → VIP services like lounge access and priority check-ins for premium business travelers.
- **Luxury Hotel Upgrade (6.3%)** → Hotel suite upgrades to encourage repeat bookings for high-value business travelers.

Why It Works:

- Business travelers value premium services, so high-end perks enhance loyalty and customer retention.
- Offering luxury upgrades maintains the high-value nature of these customers while ensuring profitability.

5. Travelers Booking Hotels Without Flights

- **Free Flight with Hotel Stay (7.9%)** → Incentivizes hotel-only customers to cross-sell flights.

Why It Works:

- Cross-selling flights to hotel-only bookers drives additional revenue per user, thus boosting overall sales.

6. Luxury Travelers

- **Ultimate Prestige Package (0.1%)** → VIP services like first-class upgrades, concierge service, and exclusive lounge access.

Why It Works:

- Tailored perks for high-spending travelers ensure brand loyalty and engagement among the most profitable customers.

Key Insights

- **Dynamic Perk Assignment:** The use of conversion scores and cluster probabilities allowed for a nuanced perk distribution that catered to user-specific behaviors. This ensured that the right users received the right perks.
- **Personalization:** This approach moves away from generic offers, making the rewards system more aligned with individual customer needs and behaviors, increasing engagement and conversion.
- **Luxury Segment:** Only the elite luxury travelers received high-value perks like the Ultimate Prestige Package, maintaining exclusivity and fostering loyalty.

Observations

- Fast Converters (33%) were assigned minimal perks such as reminders and discounts, while slow converters (67%) were given larger incentives to encourage conversion.
- The Luxury Traveler perk was very exclusive, given to only a small fraction of the user base, highlighting the high value of this segment.
- The General 5% Travel Discount was the most frequently assigned perk, likely due to it being the default offer for those not eligible for more specific perks.

Next Steps

Further Optimization

- Continue refining the conversion score and cluster probability thresholds to better match user behavior.
- Consider segmenting perks even more based on additional user traits such as booking lead time and loyalty history.

Machine Learning Integration

- Implement a machine learning model to further optimize perk distribution, potentially uncovering deeper, non-obvious patterns in user behavior and preferences.
- Leverage supervised learning to automate perk assignments and continuously improve the system based on actual user behavior.

Testing & Validation

- Conduct A/B tests to evaluate the effectiveness of different perks (e.g., Flash Sale vs. 5% Discount) to determine the best strategy for budget-sensitive travelers.

- Analyze user engagement rates and repeat booking behavior to refine perk assignment strategies over time.
- Assess the cost impact to ensure perks maximize both user conversion and profitability.

Conclusion

This data-driven strategy ensures that perks are assigned to maximize conversions while keeping profitability intact. By leveraging personalization, machine learning, and continuous testing, this system provides a strong competitive edge for customer retention. With further optimizations and scalable strategies, this approach is poised for long-term success in enhancing traveler engagement.

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