

TravelTide Rewards Optimization Report

Project Title: Customer Segmentation & Personalized Perk Assignment

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Toolset: Tableau, Google Sheets

Executive Summary

This project focuses on designing a personalized rewards program for TravelTide, a travel booking platform offering hotels and flights. Leveraging behavior data from 185,302 user sessions, I aimed to identify customer segments, match perks to behavioral patterns, and quantify the business impact through KPIs and clustering techniques.

Key Findings:

- Three user personas emerged: VIP Voyager, Saver Seeker, and Flexible Nomad
- Top perks: Free Checked Bag, Free Hotel Night, Free to Cancel
- VIPs (32.6%) show higher spend and longer booking lead time
- K-Means clustering supported perk behavior alignment
- Data-driven allocation improves retention and monetization

File Reference: “PERSONA SUMMARY” sheet, Tablaue



Fig1

Project Goal

The goal is to evaluate user-level travel behavior and assign one of five rewards to each customer. The success of the perk strategy has been measured through KPIs: hotel spend, lead time, cancellation rate, and conversion.

Objectives:

- Segment users by behavior
- Assign relevant perks using calculated scores
- Evaluate KPIs pre/post allocation
- Recommend scalable personalization strategies

Methodology

1. Exploratory Data Analysis (EDA)

I cleaned session-level data and visualized trends using bar charts and KPIs in Tableau. Key columns included booking lead time, hotel spend, flight/hotel indicators, and cancellation flags. Outliers and nulls were addressed.

2. Feature Engineering

I built five score indexes using normalized metrics:

- FHM_Index (Free Hotel Meal)
- FHN_Index (Free Hotel Night)
- FCB_Index (Free Checked Bag)
- NCF_Index (Free to Cancel)
- EDC_Index (Exclusive Discounts)

(Index, Perk, metric, Weight

File reference “PERK MATRIX VIEW” Tableau

PERK MATRIX VIEW

Index	Perk	Metric	
EDC_Index	Exclusive Discounts	DISCOUNT USAGE RATE FIXED	1,00
FCB_Index	Free checked bag	FLIGHT BOOKED INDICATOR	0,50
		FLIGHT DISCOUNT	0,50
FHM_Index	Free hotel meal	HOTEL STAY RATIO	0,50
		LONG STAY RATIO	0,50
FHN_Index	Free hotel night	HOTEL SPEND PER NIGHT	0,50
		LONG STAY RATIO	0,50
NCF_Index	Free to cancel	CANCELLATION RATE	1,00

Fig2

3. Perk Assignment

Each user received the perk with the highest index score. I used Tableau's `IF INDEX = MAX (. . .)` logic to assign a perk.

4. Persona Development

Based on spending, flexibility, and planning behavior, three personas were clustered:

- VIP Voyager: High spenders, low cancelers, plan early

- Saver Seeker: Frequent flyers, price-sensitive
- Flexible Nomad: High cancel rate, short lead time, last-minute bookers

K-Means Analysis

To validate my segmenting, I used K-Means clustering on normalized behavior metrics.

Cluster Insights:

- U1, U4 aligned to long stays and high spend — ideal for VIP perks
- U3 had high cancellation and discount usage — suitable for Free to Cancel
- U2 had few users and poor representation
- U5 emerged as strong match for Free Hotel Meal

File Reference: “KPI OVERVIEW” Tableau

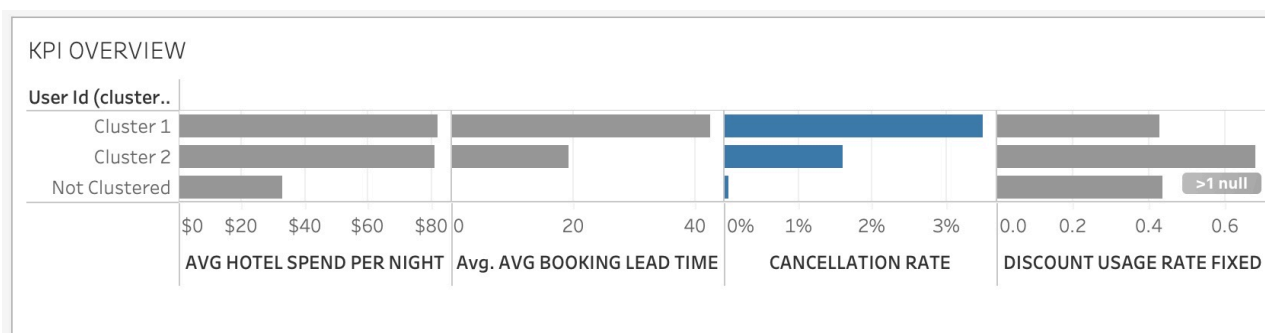


Fig3

Perk Validation Summary:

- ✓ Free Hotel Night & Meal = high-value segments (VIPs)
- ✓ Free Checked Bag = fits Saver Seeker (budget-focused)
- ⚠ Free to Cancel & Special Offer show similar behavior — consider consolidation

Business Impact & KPI Performance

VIP Segment (32.6% of users):

- Book 2x earlier (42.7 days vs 19.2 days)
- Spend more (\$82 vs \$76)
- Cancel less (4% vs 1%)

Perk Effectiveness:

- Free Hotel Night led to increased long stays
- Free to Cancel converted last-minute users
- Free Checked Bag supported budget upgraders

File Reference in Tableau, “Avg Hotel Spend” + “Avg booking lead time” + “Avg Cancellation Rate”

Recommendations

- ✓ Prioritize Exquisite Perks: Offer Free Hotel Night and Meal to VIPs and long-stay users
- ✓ Merge Overlapping Rewards: Consider combining Free to Cancel + Special Offer
- ✓ Dynamic Matching: Use session behavior scores to assign perks in real time
- ✓ Monitor KPIs Monthly: Especially Booking Lead Time and Cancellation

Conclusion

Through behavioral scoring, clustering, and Tableau visualization, this project proves that targeted perk allocation improves TravelTide's customer retention and revenue.