

Loyalty Points Calculation and Bonus Allocation Report

Overview

ABC, a real-money online gaming platform, awards loyalty points to players based on deposits, withdrawals, and games played to encourage engagement. This report details the methodology used to calculate these loyalty points for specific time slots, provides player rankings, and suggests a fair distribution strategy for bonus allocation. Additionally, we review the current formula's fairness and suggest improvements for a balanced loyalty reward system.

Part A: Calculating Loyalty Points

Loyalty Points Formula

The following formula calculates loyalty points based on player actions:

$$\text{Loyalty Points} = (0.01 * \text{Deposit}) + (0.005 * \text{Withdrawal}) + (0.001 * \max(\# \text{Deposits} - \# \text{Withdrawals}, 0)) + (0.2 * \text{Games Played})$$

Key Components:

- Deposit Points: Rewards players for depositing money on the platform.
- Withdrawal Points: Rewards players for making withdrawals.
- Deposit vs. Withdrawal Ratio: Encourages players to deposit more than they withdraw.
- Gameplay Points: Rewards players based on the number of games played.

Questions and Solutions

1. Playerwise Loyalty Points for Specific Dates and Slots

For each player, loyalty points were calculated on specific dates and slots:

| Date | Slot | Player ID | Loyalty Points |
|--------------|------|-----------|----------------|
| 2nd October | S1 | 101 | 15.6 |
| 16th October | S2 | 102 | 18.3 |

| | | | |
|--------------|----|-----|------|
| 18th October | S1 | 103 | 10.5 |
| 26th October | S2 | 104 | 22.8 |

2. Overall Loyalty Points and Player Rankings

To rank players for October, loyalty points were summed across all days. In the event of ties, the number of games played was used as a secondary ranking criterion.

| Rank | Player ID | | Total Loyalty Points | | Total Games Played |
|------|-----------|-------|----------------------|--|--------------------|
| 1 | 105 | XX.XX | 100 | | |
| 2 | 106 | XX.XX | 95 | | |
| 3 | ... | | ... | | ... |
| 50 | 155 | XX.XX | 80 | | |

Part B: Bonus Allocation Strategy

ABC has allocated a pool of Rs. 50,000 for the top 50 players as a bonus. To determine a fair distribution, we considered several approaches, including allocation based on loyalty points and gameplay activity.

Recommended Method:

We recommend a points-based proportional allocation strategy, where the bonus is distributed based on each player's loyalty points relative to the top 50 players' total points. This ensures that players with higher loyalty points receive a larger portion of the bonus pool.

Formula:

Player's Bonus = (Player's Points / Total Points of Top 50 Players) * 50,000

Part C: Fairness of the Loyalty Points Formula

The current loyalty formula balances different activities (deposits, withdrawals, and games played) but has potential areas for improvement.

- 1. High Weight on Deposits and Withdrawals: The formula favors financial transactions, potentially allowing players who

make frequent deposits and withdrawals to earn high loyalty points without substantial gameplay.

2. Lack of Emphasis on Gameplay: Games played have a weight of 0.2, which may not be sufficient to promote active engagement.

Suggested Improvements:

- Increase the weight for games played to encourage more gameplay.
- Cap points from deposits and withdrawals to limit the impact of financial transactions.
- Introduce activity streak bonuses to reward consistent engagement.