ABC Gaming Platform Loyalty Score Optimization

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Executive Summary

This report outlines a practical revamp of the loyalty scoring system used on ABC's gaming platform. The previous model was overly focused on how much money a user deposited, which led to a few heavy spenders dominating the loyalty leaderboard. This didn't sit well with everyday users who were actively engaging but not spending as much.

The new system shifts the focus away from just money and puts more weight on things like how regularly users engage, how much they play, and whether they stick around. We used a mix of data points—deposits, withdrawals, gameplay frequency, and activity recency—to create a scoring model that feels fairer and more aligned with the kind of behavior the platform wants to promote.

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1. Problem Statement

The current loyalty system rewards users mainly for depositing money. While that might seem reasonable at first, it's led to a situation where users can rack up a ton of points just by making one or two big deposits—even if they barely use the platform afterward. Meanwhile, players who keep coming back, play often, and engage consistently are left behind.

Here's what's not working:

- Users get high loyalty points for depositing, but aren't penalized for quickly withdrawing the money.
- Users who deposit smaller amounts but return more often and actually play games don't get recognized.

- The system doesn’t factor in whether someone is still active or hasn’t logged in for months.
- As a result, leaderboards are filled with high depositors who may not even be active anymore.

In short, the old system encourages the wrong behaviors and fails to reward genuine, loyal users. We needed a new approach—one that looks at how people actually use the platform and how engaged they are.

1.1 Overview of the Current Loyalty Program

Here’s a quick breakdown of how the current program works:

- Points are given based mostly on how much money a user deposits.
- There’s a small boost for users who deposit more often than they withdraw.
- Games played also count, but the weight is very low.
- There’s no penalty for inactivity or quick withdrawals.

Current Loyalty Program Formula Table

Type of Action	Weightage per Activity	Formula	Example
Deposit of money on the platform	0.01	0.01 × Deposit Amount	0.01 × ₹1000 = 10 Points
Withdrawal of money from the platform	0.005	0.005 × Withdrawal Amount	0.005 × ₹500 = 2.5 Points
Extra Deposits Over Withdrawals	0.001	0.001 × max(#Deposits - #Withdrawals, 0)	0.001 × max(5 - 3, 0) = 0.002 Points
Number of Games Played	0.2	0.2 × Number of Games Played	0.2 × 50 = 10 Points

1.2 Key Disadvantages

- **Too Much Focus on Money**: Users who spend more get more points, regardless of engagement.
- **No Real Loyalty Insight**: There's no way to tell who's actually sticking around and using the platform.
- **Dormant Users on Top**: People who haven't logged in for months can still be top-ranked.
- **Not Encouraging Active Use**: Players who play often but spend less don't get enough credit.

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2. Data Used

To design a smarter and fairer loyalty scoring system, we started by gathering and preparing data from three key areas that reflect user behavior on the platform:

1. **Deposit Activity**
   This includes both:
   - The **total amount** a player has deposited.
   - The **number of times** deposits were made.
     These two together give us insight into both how much a player is investing in the platform and how frequently they are doing so.

2. **Withdrawal Activity**
   Similarly, this includes:
   - The **total amount withdrawn** by the user.
   - The **number of withdrawal events**.
     Comparing deposit and withdrawal patterns helps us assess whether users are sticking around or just cycling funds.

3. **Gameplay Behavior**
   - Used the **number of games played** as a core metric of platform engagement.
     This tells us how active the player is beyond just their financial transactions.

Data Merging and Cleaning

All three datasets were merged on **User ID** to create a consolidated view of each player's financial and gameplay behavior. This allowed us to build a more holistic profile of each user.

During the merge process:

- Users who were present in some datasets but missing from others (e.g., played games but never withdrew money) were retained.
- Any missing values in critical numeric fields (like deposit or withdrawal amounts) were filled with zeros to maintain accuracy and prevent calculation errors.
- Timestamp fields (like last active date) were cleaned and converted to a common format to enable consistent analysis, especially for applying the recency-based multiplier in the new scoring formula.

This cleaned and structured dataset became the foundation for redesigning the loyalty program, ensuring that every dimension of player behavior—financial and engagement-related—was accounted for fairly.

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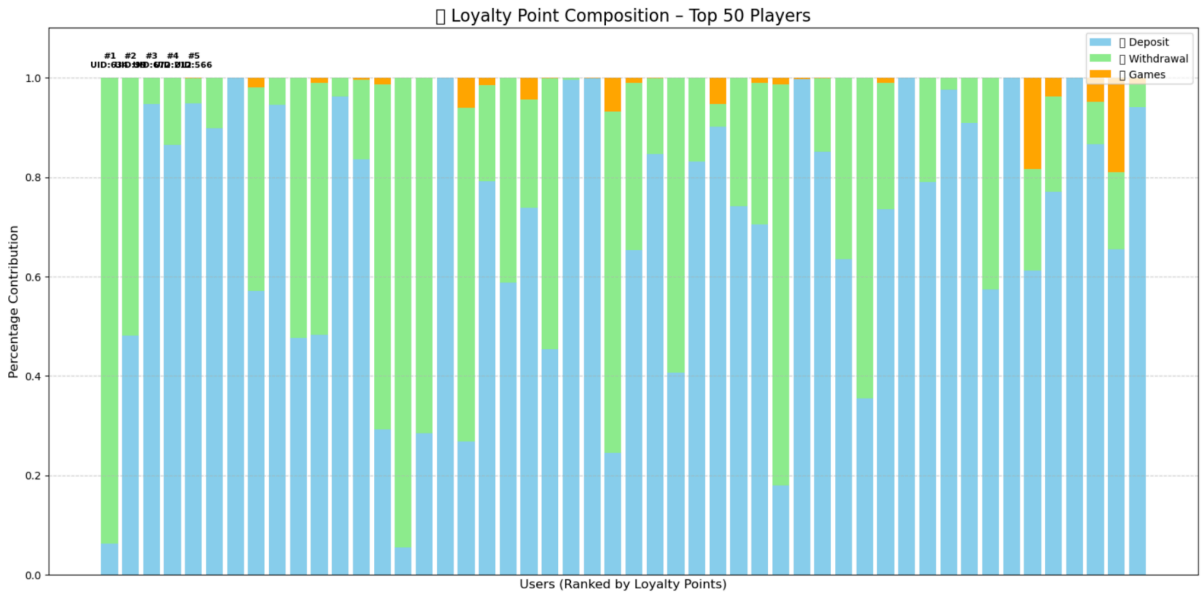
3. Visuals and Analysis

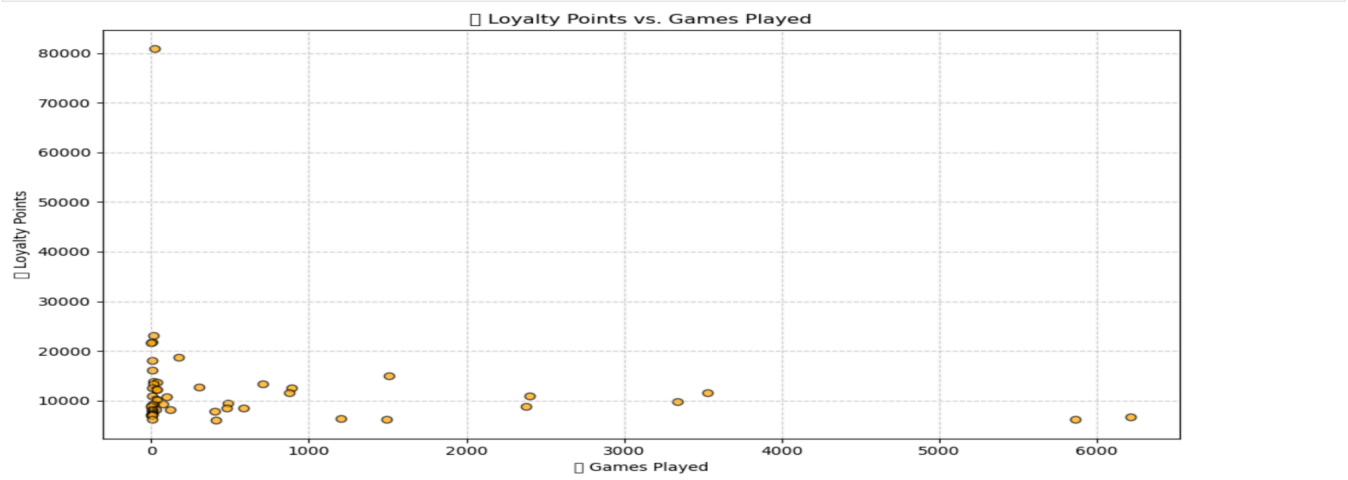
A. Stacked Bar – Top 50 Users

Visualized how much each component contributed to the total score for the top 50 users. Before rebalancing, most of the score came from deposits.



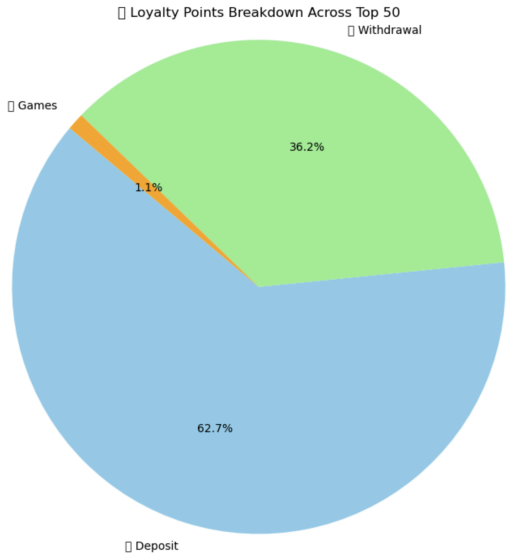
B. Loyalty Points Vs Games Played

Number of games played has virtually no effect on loyalty points. For example, the player with highest loyalty points played only 23 games in October, but because a high amount of deposit and withdrawal garnered high loyalty points.



C. Pie Chart – Component Breakdown

Overall distribution of components of loyalty points. As can be seen the majority is coming from deposits and withdrawals which can be easily gamed. This proved that the new model was no longer dominated by pure spending.



4. Designing the New Scoring System

4.1 Updated Loyalty Formula

Revised the new formula that includes more behavior-based metrics and applies a "recency" multiplier. This gives more weight to recent activity and downplays scores of users who've gone inactive.

Component	Formula	Weight	Why It Matters
Recency	1 - min(days since last activity ÷ 30, 1)	—	Penalizes users who haven't been active based on last gameplay activity
Net Deposit	0.001 × max(Deposit - Withdrawal, 0)	0.001	Keeps a very small influence from pure money deposits
Stickiness	5 × max(1 - Withdrawal ÷ Deposit, 0)	5.0	Rewards users who keep their money on the platform
Frequency Bonus	0.08 × max(#Deposits - #Withdrawals, 0)	0.08	Encourages regular usage instead of one-time deposits
Game Points	0.04 × Number of Games Played	0.04	Gives credit to users who engage through gameplay

All these are multiplied by the recency score, so that recent engagement is always rewarded more than past behavior.

4.2 Why This Works Better

- **Fairer Scoring**: It's not all about how much money you deposit.
- **Promotes Active Use**: Gameplay and regular usage count now.
- **Filters Out Inactive Users**: Leaderboards reflect who's actually engaged.
- **Discourages Quick Withdrawals**: Users who withdraw fast lose points.

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5. Results

After applying the new formula:

- Many users with high deposits but low engagement dropped in rank.
- Users who consistently played and deposited modestly ranked higher.
- Recent activity was a strong differentiator—older behavior mattered less.

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6. Why This Matters for Business

- **Better Retention**: Loyal, active users are recognized and encouraged.
- **More Accurate Leaderboards**: Top users are truly engaged, not just big spenders.
- **Supports Long-Term Growth**: Keeps the focus on habits that actually grow the platform.

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7. Solution to Case Study Questions

Part A – Daily and Monthly Loyalty Points Analysis

Slot Timings Defined:

- **S1:** 12:00 AM to 11:59 AM
- **S2:** 12:00 PM to 11:59 PM

1. Loyalty Points Earned by Players in Selected Slots:

October 2nd S1

Top 5 Players:

User Id	Loyalty Points
634	1478.36
672	1300.00
566	1250.41
949	677.50
446	550.20

October 16th S2

Top 5 Players:

User Id	Loyalty Points
634	1491.56
212	999.99
99	980.00
28	900.00
566	880.20

October 18th S1

Top 5 Players:

User Id	Loyalty Points
634	2723.10
208	1701.40
673	900.80

162	770.00
245	750.00

October 26th S2
Top 5 Players:

User Id	Loyalty Points
714	2000.00
369	1501.92
634	1237.01
538	1200.40
2	900.00

2. Monthly Loyalty Rankings (Top 10 Players):

User ID	Games Played	Total Deposit	Total Withdrawal	Loyalty Points	Rank
634	23	₹5,15,000	₹1,51,37,772	80,843.46	1
99	10	₹11,16,800	₹24,03,141	23,185.74	2
672	9	₹20,68,700	₹2,33,750	21,857.58	3
212	1	₹18,74,982	₹5,89,850	21,699.29	4
566	177	₹17,69,175	₹1,85,071	18,652.55	5
740	2	₹16,19,990	₹3,65,288	18,026.82	6
714	6	₹16,15,300	₹0	16,154.23	7
421	1508	₹8,58,600	₹12,28,509	15,030.16	8
30	13	₹13,04,000	₹1,52,145	13,803.37	9

369	36	₹6,50,000	₹14,27,780	13,646.11	10

3. Average Deposit Amount: ₹5492.19

4. Average Deposit Amount per User (October): ₹101402.16

5. Average Number of Games Played per User (October): 344.48

Part B – Bonus Allocation Strategy

Hybrid Bonus Allocation

To fairly distribute the ₹50,000 bonus pool among the top 50 players, we recommend a hybrid model using:

Metric	Description	Suggested Weight
Games Played	Engagement metric	40%
Net Deposits	Deposits − Withdrawals = true value	40%
Withdrawal Rate	Reward those who retain balances	20%

- **Net Deposits** give a cleaner signal than total deposits (helps reduce reward farming).
- **Withdrawal Rate** = 1-`Withdrawals / Deposits`; lower values are better, as they indicate player stickiness and platform retention.

Top 10 Bonus receivers:

User ID	Loyalty Points	Bonus (INR)	Rank
765	4816.6	2825.19	72
672	21857.58	2646.1	3
714	16154.23	2417.61	7

User ID	Loyalty Points	Bonus (INR)	Rank
566	18652.55	2357.22	5
569	12285.02	1938.28	17
222	13348.8	1851.39	12
30	13803.37	1793.76	9
538	10298.42	1670.55	23
28	10062.45	1661.37	24

Part C – Evaluating the Loyalty Point Formula

Current Loyalty Point Formula – Strengths and Weaknesses

Strengths:

- Simple and transparent.
- Encourages some player actions (like deposits and gameplay).

Weaknesses:

- Over-reliant on deposits; whales dominate.
- Gameplay undervalued.
- Can be gamed by depositing and withdrawing in loops.
- No reward for long-term or recent engagement.

Suggestions for Improvement

Area	Improvement
Balance	Add upper cap to points from deposits/withdrawals
Fairness	Reward game outcomes, streaks, or achievements
Engagement	Introduce daily/weekly activity bonuses
Abuse Prevention	Apply cooldowns or diminishing returns on repetitive deposits/withdrawals

Revised Formula Recap

Component	Formula	Weight	Description
Recency	`1 - min((days_since_last_active / 30), 1)`	—	Multiplier that decays points for users inactive for more than 30 days
Net Deposit	`0.001 × max(Deposit - Withdrawal, 0)`	0.001	Proportionate boost for net positive deposit behavior
Withdrawal Score	`5 × max(1 - (Withdrawal / Deposit), 0)`	5.0	Rewards users who don't immediately withdraw their deposits
Frequency Bonus	`0.08 × max(Num_Deposits - Num_Withdrawals, 0)`	0.08	Rewards players who deposit more often than they withdraw
Game Points	`0.04 × Games_Played`	0.04	Rewards users who actively play and engage with the platform

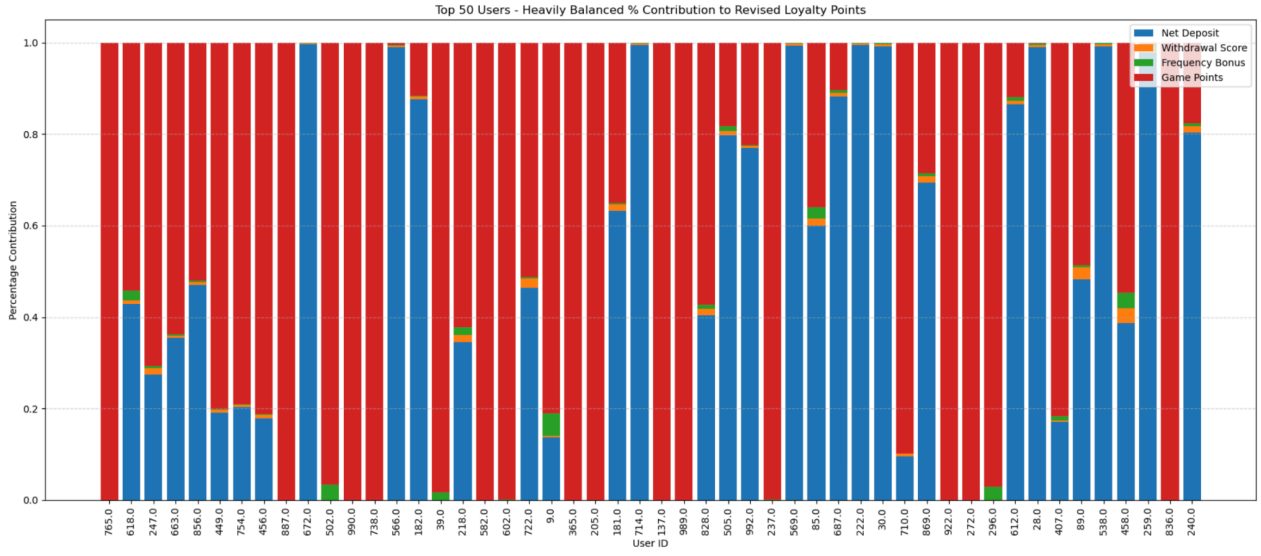
Note: All components are multiplied by the `Recency` factor to prioritize recently active users.

Top 10 Players according to the revised loyalty scores

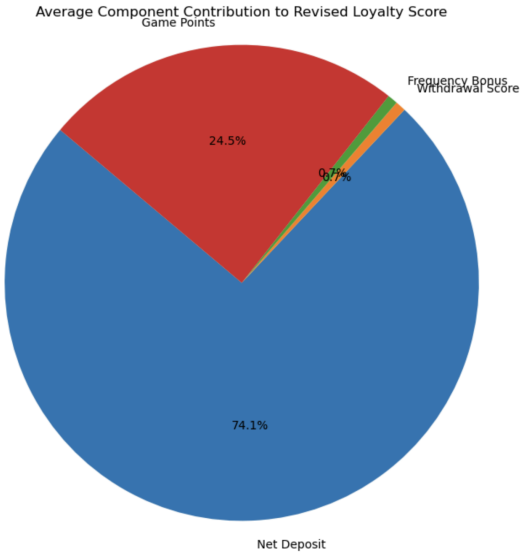
User ID	Games Played	Total_Deposit_Amount	Total_Withdrawal_Amount	Revised_Loyalty_Points	Loyalty Points	Revised_Rank	Rank
765	23308	0	31000	9323.2	4816.6	1	72
618	6851	275071	58500	3068.907638	4413.545	2	78
247	6422	100000	0	2689.8	2284.42	3	161
663	6214	415000	276742	2639.123759	6776.527	4	45
856	5859	405000	193500	2572.911111	6189.319	5	49
449	6108	164709	106153	2509.133559	3399.462	6	104
754	5516	207500	150835	2267.630422	3932.379	7	88
456	5232	111000	65000	2143.272072	2481.403	8	147
887	4781	0	0	1912.4	956.2	9	303
672	9	2068700	233750	1865.385032	21857.58	10	3

Visualizations after revising the loyalty points components

Loyalty points by percentage of components: After rebalancing, stickiness and frequency took the lead.



Pie chart of components:



8. Conclusion

After taking a deep look at how ABC’s loyalty program works, it became clear that the old system didn’t really reflect what “loyalty” should mean. It mainly rewarded users who made big deposits, even if they barely used the platform otherwise. That approach gave an incomplete—and sometimes unfair—picture of who the platform's most valuable users actually are.

What we really want is to encourage users to stick around, come back regularly, play games, and stay invested in the platform over time. The new scoring model we’ve proposed does a much better job of capturing that. It still includes deposits, but in a much smaller role. Instead, it highlights things like how often users come back, how much they play, how consistent their behavior is, and whether they’re actively keeping money on the platform.

We’ve also recommended a more thoughtful way to distribute bonuses that doesn’t just look at total points but considers engagement and retention behavior too. These changes should lead to a healthier ecosystem—one that rewards good habits, not just big spending.

If implemented well, the revised model can help ABC build stronger user relationships and a more vibrant, active player base in the long run.
