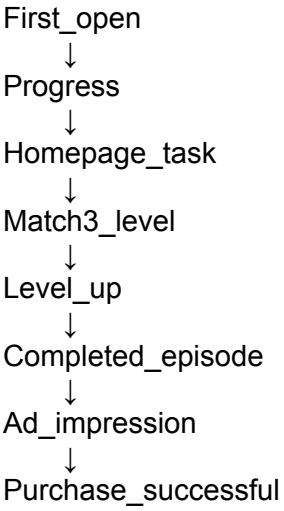
# Data Analysis for Mobile Gameplay Data

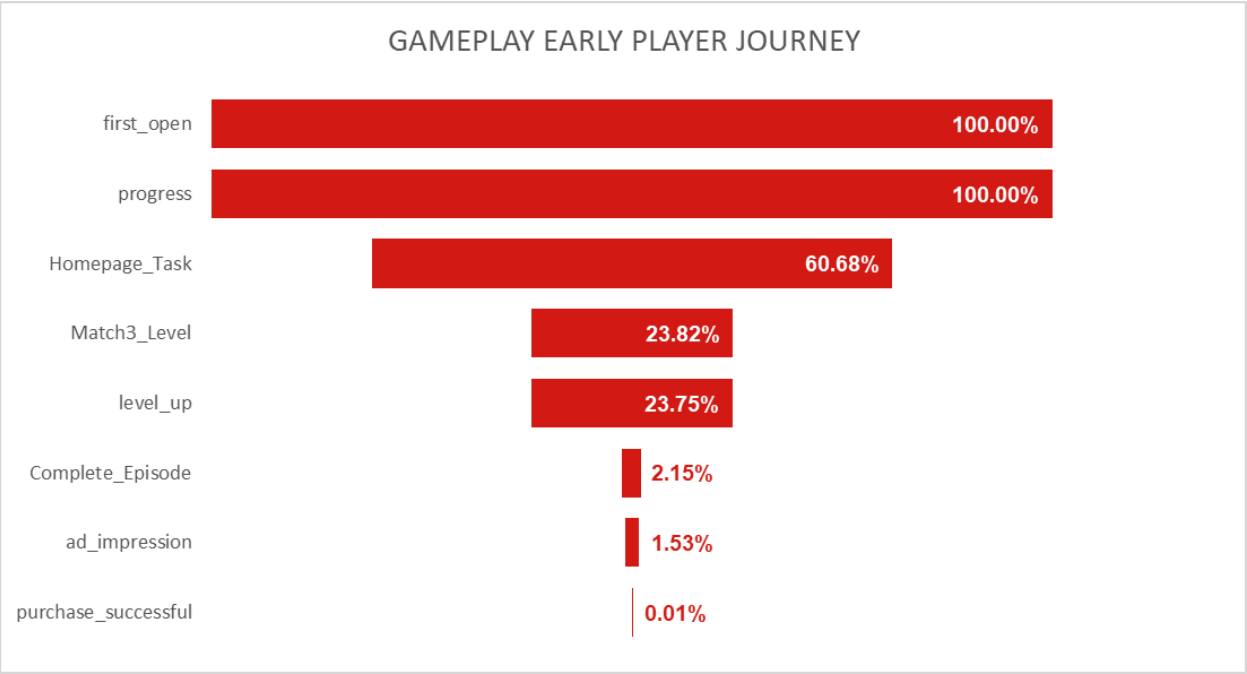
**Introduction:**
This report presents two key analyses on *Gameplay*. The first focuses on the early player journey, using a funnel analysis to map progression from first open to monetization and identify major drop-off points. The second provides a customer segmentation framework, grouping players by engagement, motivation, and progression indices for targeted product and marketing actions. Together, they offer a structured view of player behavior to guide strategies for improving retention, progression, and monetization.

**Funnel Design**




**Key stages:**

- **Install & Launch:** When an individual launches the game and becomes a player. Measured by `first_open`, automatically logged the first time a user opens the app after installation.
- **Onboarding:** Introduces players to the game. Measured by `progress`, logged when a player begins the guided onboarding or first playable task.
- **Core Gameplay:** Where players engage with the core loop, divided into two parts:
    - **Meta layer / Builder:** Rebuilding Gameplay tasks requiring keys, measured by `Homepage_Task`.
    - **Core layer / Puzzle:** Completed to earn keys used in the meta layer, measured by `Match3_Level`.
- **Progression:** Players complete episodes in the meta layer and levels in the core layer, measured by `Complete_Episode` and `Level_up`.
- **Monetization:** Players engage in revenue activities. Measured by `ad_impression` and `purchase_successful`, logged when players watch ads or make in-game purchases.




Player activity shows a steep decline from onboarding to later gameplay stages. While all players who opened the app began the tutorial, only about 61% continued to builder tasks and about 24% reached puzzle gameplay. Completion drops further, just 2.1% of players finish an episode, and only 1.5% reach ad-based monetization.

This indicates strong initial curiosity but significant drop-off during core engagement which is consistent with observed friction points such as rushed onboarding, excessive ad duration, and extended task pacing, which likely impacted retention and monetization.

**Drop off points from personal early player journey experience**

- **Onboarding**: the starting tutorial had no audio, was too fast to understand and not explanatory enough which can deter first timers from progressing with the game.
- **Homepage_Task (Episode 2)**: it was longer than I expected with features I would not have personally applied and I had to get keys for. This caused frustration which is a churn risk, I would have preferred to be given an option of features to play for.
- **level_up**: in the puzzle (core layer), after losing moves but not finishing the level, the only free option to get more moves was to watch an ad which was longer than I would like.
- **ad_impression**: The ads in between levels were too long, repetitive (showing only the same ad) and frustrating because it was keeping me from going to the next challenge. This caused ad fatigue and would have eventually led to churn.

**Recommendations:**

- **Improve onboarding clarity:** Add audio guidance and slow down tutorial pacing to enhance comprehension and early retention.

- **Optimize task length:** Shorten early builder episodes or allow players to choose preferred tasks to reduce frustration and maintain engagement.
- **Refine ad strategy:** Limit repetitive interstitials, shorten ad length, and prioritize rewarded ads to reduce ad fatigue and improve satisfaction.
- **Balance difficulty and rewards:** Offer alternative ways to earn keys (daily bonuses, short challenges) to sustain motivation and progression.
- **Personalize pacing:** Use adaptive difficulty and task variety to keep both new and returning players engaged, boosting retention and monetization.

## Customer Segmentation Map for Gameplay

| **EDS → MAI ↓ /** | **Low (L)** | **Medium(M)** | **High(H)** |
|---|---|---|---|
| **High(H)** | 🎯 **Potential Core Starters**<br><br>Low EDS + High MAI = motivated but inactive. Early PS → nurture with onboarding, hints, early challenges. | 🔥 **Focused Achievers**<br><br>Medium EDS + High MAI = purposeful players; play strategically. Mid PS → reward consistency. | 🏆 **Core Champions**<br><br>High EDS + High MAI = your power players; Late PS → loyal, high-value users. |
| **Medium(M)** | 🌙 **Casual Returnees**<br><br>Low EDS + Med MAI = occasional players. Early/Mid PS → re-engage vie events | ⚖️ **Balanced Regulars**<br><br>Medium all-rounders, stable retention. Mid PS → solid backbone of user base | 💎 **Veteran Decorators**<br><br>High EDS + Med MAI = consistent play, creative focus. Late PS → long-term retention. |
| **Low (L)** | 💤 **Dormant / Churned Users**<br><br>Low EDS + Low MAI = inactive and unmotivated. Any PS → churn risk. | ⚙️ **Routine Users**<br><br>Medium EDS + Low MAI = play out of habit; Mid/Late PS → revive with novelty. | 💤 **Habitual Veterans**<br><br>High EDS + Low MAI = still active but emotionally disengaged; Late PS → risk of burnout. |

## Progression (Color Legend)

- Low (Early): New players learning mechanics.
- Medium (Mid): Steady progress, testing features.
- High (Late): Advanced or Endgame users

## Rationale

This customer segmentation map was developed to categorize Gameplay players using three composite indices: *Engagement Depth Score (EDS)*, *Motivation Affinity Index (MAI)*, and *Progression Score (PS)*, representing **how players behave**, **why they play**, and **how far they've advanced**. Find below the computation for each indices.

A composite index approach was used to combine multiple behavioral events into standardized, data-driven metrics rather than relying on single variables. This method smooths out daily fluctuations and captures overall player consistency and intent. Benchmarks were set using percentile logic (low, medium, high) to reflect realistic behavioral tiers within the player base.

**Assumptions:**

- Player event data (e.g session_start, Match3_Level, Completed_Task) accurately reflects engagement patterns.
- Motivation categories can be inferred from in-game behavior.
- Distribution of scores follows a normal or near-normal curve, allowing percentile thresholds to represent engagement tiers.

**Usefulness:**
This segmentation supports both **marketing** and **product design** decisions. Marketers can personalize campaigns e.g reactivation offers for "Casual Returnees" or loyalty rewards for "Core Champions." Product teams can tailor content pacing, difficulty, and feature updates by segment, improving retention and monetization outcomes across the player lifecycle.

**Computation:**

| Dimension | Metric Name | How to Calculate (using events) | Benchmark Thresholds |
|---|---|---|---|
| **Behaviour** | Session Frequency | COUNT(session_start) / week | High ≥ 5 • Medium 3-4 • Low ≤ 2 |
| | Avg Session Duration | (Σ session_time) / COUNT(session_start) | High > 15 min • Medium 5-15 • Low < 5 |
| | Level Play Rate | COUNT(Match3_Level + Match3_Level_Failed) / week | High ≥ 10 • Medium 5-9 • Low < 5 |
| **Motivation** | Achievement Index | (levels_won / levels_played) × retry rate | High ≥ 0.7 • Med 0.4-0.69 • Low < 0.4 |

| | | | |
|---|---|---|---|
| | Social Interaction Score | `COUNT(Homepage_Leaderboard + Camera_Share + Homepage_Profile) / total events` | High ≥ 0.10 • Med 0.05-0.09 • Low < 0.05 |
| | Creativity Score | `COUNT(Homepage_Task + Completed_Task + Homepage_Camera) / total events` | High ≥ 0.15 • Med 0.07-0.14 • Low < 0.07 |
| | Reward Orientation | `COUNT(Claimed_Daily_Bonus + ad_reward + offer_accepted) / week` | High ≥ 5 • Med 2-4 • Low < 2 |
| **Progression** | Level Milestone | `MAX(level_up)` or `COUNT(Complete_Episode)` | Early < 5 • Mid 5-15 • Late > 15 |
| | Episode Completion Rate | `COUNT(Complete_Episode) / COUNT(Homepage_Episodes)` | High ≥ 0.8 • Med 0.4-0.79 • Low < 0.4 |
| | Fail Recovery Rate | `COUNT(Gameplay_PreFailed_Lose1Life) / COUNT(level_end)` | High ≤ 0.2 (few fails) • Med 0.21-0.5 • Low > 0.5 |

| **Composite Index** | **Included Metrics** | **Benchmark Thresholds** |
|---|---|---|
| Engagement Depth Score (EDS) | Avg Session Duration + Session Frequency + Level Play Rate | High > 12 • Medium 8 - 12 • Low < 8 |
| Motivation Affinity Index (MAI) | Avg of {Achievement Index, Creativity Score, Social Interaction Score, Reward Orientation} | High > 0.7 • Medium 0.4 - 0.7 • Low < 0.4 |
| Progression Score (PS) | Max of {Level Milestone, Episode Completion Rate, Fail Recovery Rate} | High > 12 • Medium 8 - 12 • Low < 8 |

NB: All numbers can be adjusted to the actual data for Gameplay and benchmarked based on percentile logic.